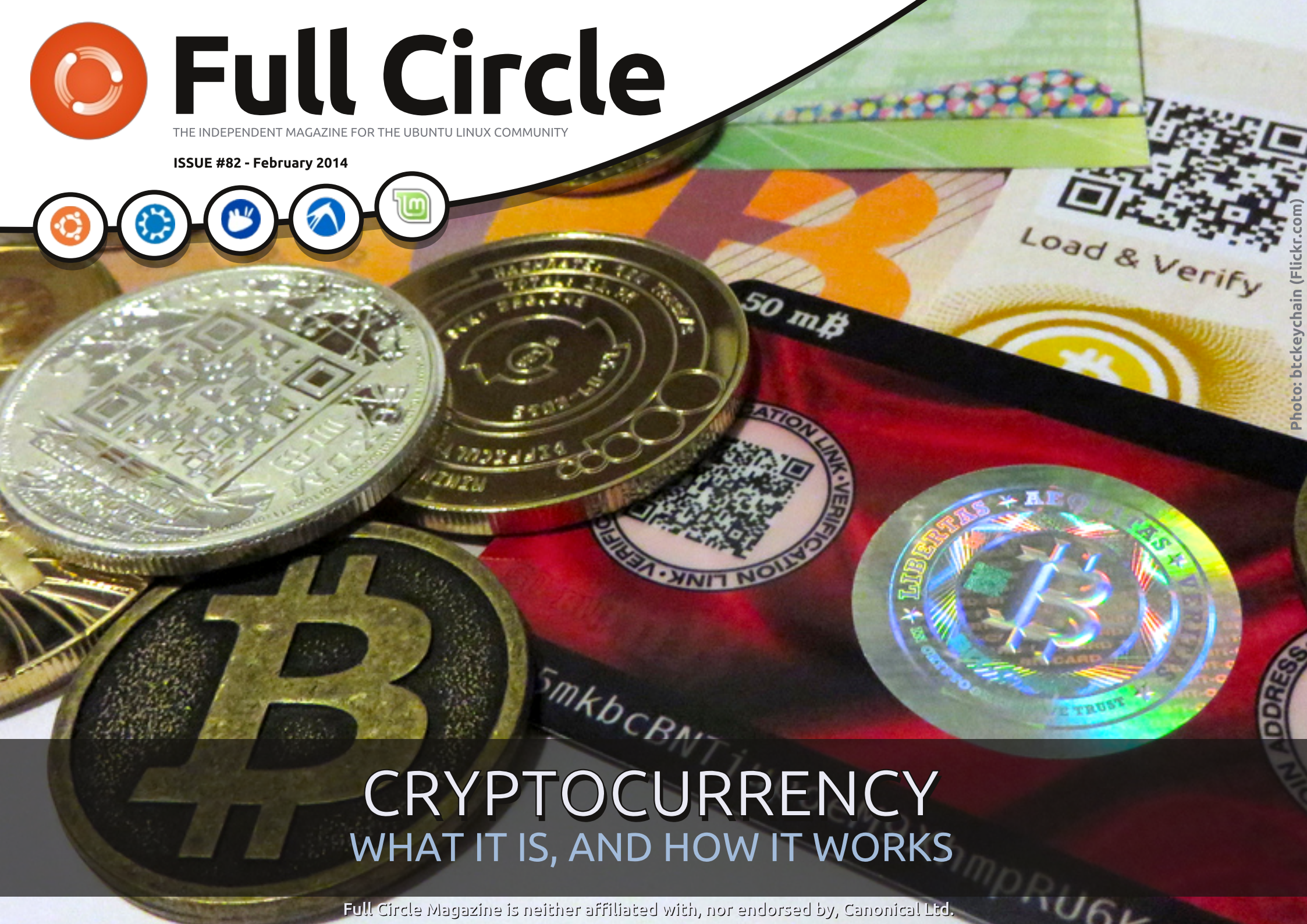




# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #82 - February 2014



## CRYPTOCURRENCY WHAT IT IS, AND HOW IT WORKS

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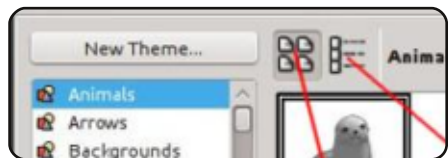




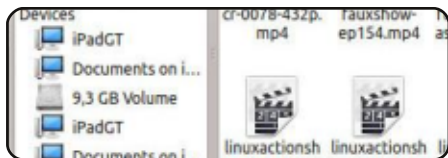
## HowTo



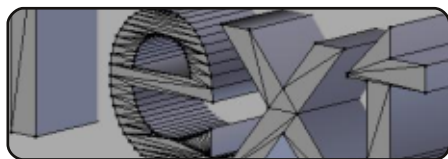
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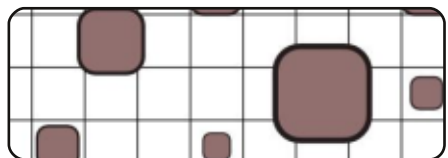
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## Graphics



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```
#An alias to make the ls
command more detailed
alias ls = "ls -la --
color=always --classify"
```

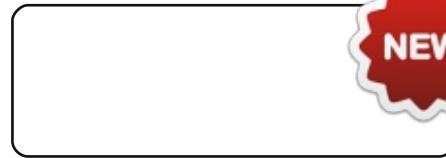
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A	B	C	D
3	9	1 125	1125
7	21	2 625	2625
11	33	4 125	4125
15	45	5 625	5625
19	57	7 125	7125
23	69	8 625	8625
27	81	10 125	10125
31	93	11 625	11625

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Device: /dev/sda Model: Hitachi HT541680J5A00					
Identify	Attributes	Capabilities	Error Log	Self-test Logs	Perform Tests
SMART Attributes Data Structure revision number: 16					
ID	Name	Failed	Norm-ed value	Worst	Thresh
1	Raw Read Error Rate	never	100	100	62
2	Throughput Performance	never	100	100	40
3	Spin-Up Time	never	253	100	33

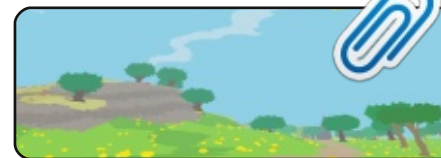
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Win32/InstalleRex.M potentially unw  
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## WELCOME TO ANOTHER ISSUE OF FULL CIRCLE.

Some new things for you this month, but fear not, we've got the usual suite of Python, LibreOffice, Inkscape, and Blender. They're joined by an article on connecting your iOS device to your Linux PC.

As you can see from the cover, we've got an interesting piece on cryptocurrency (which is open source) this month, and for the next couple of months. In part one you'll learn what Bitcoin is and how it works. I'm also tossing in some cryptocurrency as a prize. Answer the simple question at the end of the article, and you could win 500 DOGE (Dogecoins). It's the third most used digital currency and is based on the highly popular Internet shibe meme. Much competition! Such a win! In future issues, Oscar (from Ubuntu Games) will discuss XPR (Ripple) and I'll tell you how to compile the Dogecoin wallet.

Speaking of competitions, while it was on sale for £1 on Steam, I bought Proteus and two extra copies. You can read my review and enter the competition in the Ubuntu Games section. Just make sure you have a Steam account before entering.

Gord returns this month with his Q&A and is joined by our Security Q&A from Lynis developer Michael Boelen. While on the subject of security, we also have a review of ESET NOD32 Antivirus. The Windows viruses may not affect your Linux machine, but you may be passing them along to Windows users.

Last, and by no means least, I hope you enjoy the revamped news section from our new team of reporters.

**All the best, and keep in touch!**

Ronnie

[ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org)



This magazine was created using :



## Full Circle Podcast

Released monthly, each episode covers all the latest Ubuntu news, opinions, reviews, interviews and listener feedback. The Side-Pod is a new addition, it's an extra (irregular) short-form podcast which is intended to be a branch of the main podcast. It's somewhere to put all the general technology and non-Ubuntu stuff that doesn't fit in the main podcast.

### Hosts:

- Les Pounder
- Tony Hughes
- Jon Chamberlain
- Oliver Clark



<http://fullcirclemagazine.org>



AUDIO MP3



AUDIO OGG

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## ASUS ANNOUNCES CHROMEBOX, CHROME OS DESKTOP FOR UNDER \$200

On the 4th of February, ASUS announced the Chromebox, a desktop version of the Chromebook, starting at just \$179. The Chromebox has been touted as "the most compact and powerful Chrome device to date" by Felix Lin, Director of Product Management at Google.

The device measures only slightly larger than an Apple TV at 4.88" by 4.88" (12.4cm by 12.4cm), and comes with a built in 16GB SSD, four USB 3.0 ports, Bluetooth 4.0, an SD card reader, and integrated malware and virus protection.

Gary Key, Senior Press Relations manager for ASUS, stated, "We firmly believe the ASUS Chromebox addresses the need for an extremely cost effective computing solution in the education, small and medium-sized business, and home markets."

ASUS will offer an option of an Intel 4th generation Core i7-4600U, Core i3-4010U or Celeron 2955U processor options, available in the US from March 2014.

Source:

<http://promos.asus.com/us/chrome-os/chromebox/>

Submitted/Written by: **Vincent Sesto**

## LINUX KERNEL 3.13.2 IS NOW AVAILABLE FOR DOWNLOAD

Greg Kroah-Hartman has announced on February 6, that the second maintenance release of the stable Linux kernel 3.13 is now available for download.

"I'm announcing the release of the 3.13.2 kernel. All users of the 3.13 kernel series must upgrade. The updated 3.13.y git tree can be found at: [git://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-stable.git](http://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-stable.git) linux-3.13.y and can be browsed at

the normal kernel.org git web browser: <http://git.kernel.org/?p=linux/kernel/git/stable/linux-stable.git;a=summary>,"

Linux kernel 3.13.2 brings updated architectures, including ARM, s390, PowerPC, PA-RISC, and x86, numerous updates drivers (mmc, wireless, rtc, scsi, tty, usb, etc.), some file system improvements (mainly Btrfs, HPFS and EXT4), a couple of networking fixes for IPv4 and IPv6, and some sound improvements.

Source:

<http://news.softpedia.com/news/Linux-Kernel-3-13-2-Is-Now-Available-for-Download-424739.shtml>

Submitted/Written by: **Marius Nestor**

## AMD CATALYST 14.1 BETA ARRIVES WITH A BANG AND WITH LINUX KERNEL 3.13 SUPPORT

This is the first AMD Catalyst driver update for Linux in 2014, and the developers made a considerable effort to integrate a large number fixes and other improvements. According to them, AMD Catalyst 14.1 Beta Linux video driver offers support for AMD A10-7850K and AMD A10-7700K. Also, the driver comes with RHEL 6.5, openSUSE 13.1, Ubuntu 13.10, Xserver 1.15, and Linux kernel 3.13 support.

Highlights of AMD Catalyst 14.1 Beta Linux video driver:

- A system hang on resume from S4 with OpenGL screen saver running has been fixed;
- OpenCL test failure in CrossFire Mode has been fixed;
- Brightness can finally be adjusted on Ubuntu 12.04 LTS;
- A crash that occurred when resizing Konsole has been fixed.

Remember that the purpose of beta version is for testing only and should not installed on production machine.



Source:

<http://news.softpedia.com/news/AMD-Catalyst-14-1-Beta-for-Linux-Arrives-with-a-Bang-and-With-Linux-3-13-Support-423025.shtml>

Submitted/Written by: **Silviu Stahei**

## RASPBERRY JAMBOREE, MANCHESTER 27 FEB - 1 MAR 2014

The 2014 Raspberry Jamboree is coming up at the end of February. Last year was fantastic and this year's is looking bigger and better. Last year, they sold all 400 tickets well before the Jamboree. People attended the event in Manchester took part in talks, hands-on practical sessions and an opportunity to meet others to share ideas and projects.

Well at the end of February, they are holding the 2014 OCR Raspberry Jamboree and this year it's even bigger than last year, running over three days with a whole range of ways that you can discover the educational potential of the Raspberry Pi computer. At the same time there is also the Education Innovation Conference

and Exhibition taking place with many CPD sessions on offer. So it's not all about the Raspberry Pi, but if you've got one and you want to make the most of it, we'll be able to help you.

On Thursday 27th February during the day we have a variety of talks and hands-on sessions as well as a free twilight session from 4-7pm. On Friday 28th February we have even more talks and activities during the day and in the evening from 5-7pm we celebrate the 2nd birthday of the Raspberry Pi with a family friendly event with fun, games & prizes. I realise that it can be tough to get time out of school, hence the evening & weekend activities too. If you can only be released from school for one day, I would recommend the Friday.

Then on Saturday 1st March at Edge Hill University we are holding our Jam Hack Day for up to 300 children, teachers, parents, enthusiasts etc. to come and learn together and problem solve in teams. Please consider bringing either your family or a group of pupils to this event. You might want to bring a handful of interested pupils, or suggest they make their own way there with

their families.

Source:

<http://www.raspberrypi.org/archives/6074>

Submitted/Written by: **Clive**

## NEW LIBREOFFICE VERSION TARGETS BUSINESS, POWER USERS

LibreOffice is a fork of OpenOffice.org, which is looked after by the The Document Foundation. It was forked in September 2010, at which time it was owned by Oracle.

In the new release, version 4.2, announced overnight, Calc, the application used to generate spreadsheets, has had a major code refactoring and as a result works much faster with big data, especially when calculating cell values, and importing large and complex XLSX spreadsheets, according to a media release.

Apart from this, an optional new formula interpreter enables massively parallel calculation of formula cells using the GPU via OpenCL. The latter works best with

a Heterogeneous System Architecture (HSA) such as the new AMD Kaveri APU.

LibreOffice 4.2 has better interoperability with Microsoft OOXML, particularly for DOCX, and legacy RTF documents. There are new import filters for documents generated in another free word processor, Abiword, and also in Apple Keynote. For Windows business users, the new release has a simplified custom install dialog to avoid potential mistakes, and the ability to centrally manage and lock down the configuration with Group Policy Objects via Active Directory. There is much better integration with Windows 7 and 8, with thumbnails of open documents now grouped by application and a list of recent documents, both showing on the task bar.

For mobile users, LibreOffice now supports an Impress Remote Control for iOS - in addition to the already available Impress Remote Control for Android - which allows visual management of presentation delivery on the laptop using the screen of an iPhone or iPad. The app is waiting for review from Apple, and will be announced as soon as it is available on iTunes

Store.

LibreOffice 4.2 is the first open source suite to ship a new Windows (IAccessible2-based) accessibility feature developed by IBM. This is considered experimental for this release, but will replace legacy Java-based accessibility in the next major release.

Developers have also continued to work on the user interface and 4.2 includes a neat "flat" icon theme - Sifr - and an updated set of default document styles. The suite has a number of extensions available. Last year, commercialisation of LibreOffice was handed over to the UK-based open source firm Collabora by SUSE Linux.

Source:  
<http://www.itwire.com/business-it-news/open-source/62985-new-libreoffice-version-targets-business-power-users>  
 Submitted/Written by: **Sam Varghese**

## NEW FILE MANAGER FOR UNITY

For the past year, Mark Shuttleworth has been talking about full O.S. convergence, which means: one Operating System, and one User Interface for desktops, laptops, tablets and phones. The project seems very promising, with Canonical being ahead of Apple and Microsoft, in some aspects of the convergence.

The main things Canonical have done so far to foster this convergence have been creating the Unity Interface and launching a complete Software Development Kit (Ubuntu SDK) based on QT5/QML and the QT Creator IDE, which allows the developers to create multiplatform apps with advanced graphics.

QT is the UI library that KDE and many apps are based on. QML is the new scripting language for QT for the creation of rich UIs.

It seems clear that Canonical is steering away from GTK/Gnome building blocks and moving towards QT/QML. For instance, Unity dock is being re-coded in QML. The next natural step for Canonical is to replace the main components of Unity Desktop,

which are those of Gnome Desktop, with fresh new QT/QML based pieces of software. One of the first things that is going to be changed, quite predictably, is the file manager. The changes in Nautilus in its latest versions, and in particular the removal of some functionality (e.g. split screen) have created many problems to Canonical. Therefore, Oliver Grawert, a developer from Canonical, in a recent mailing list post, announced that developers are working on the creation of a more stable and more complete file manager, based on QML.

Source:  
<http://www.omgubuntu.co.uk/2014/02/ubuntu-create-new-file-manager-unity>  
 Submitted/Written by: **Federico Caiazza**

## FIRST UBUNTU PHONES ANNOUNCED

Canonical announced they have signed agreements with two mobile manufacturers: the Spanish BQ, and the Chinese Meizu. The aim is to bring Ubuntu phones to consumers globally in 2014.

Mark Shuttleworth, in his announcement streamed on [ubuntuaair.com](http://ubuntuaair.com), explained that those two companies have been chosen as the launchers of Ubuntu phones, because they have a successful track record in breaking into emerging markets.

BQ is a manufacturer of multimedia devices operating in Europe and employing 600 people. They grew exponentially from nothing up to selling almost 1.5 million devices in less than a year in 2013, and they have become the second biggest seller of unlocked smartphones in Spain.

Alberto Mendez, CEO of BQ, said about the partnership: "Ubuntu's ongoing success on PCs, as well as the huge support it has gained for its mobile proposition provides the best opportunity to bring an alternative platform to market on our hardware".

Meizu is one of China's most successful high-end smartphone manufacturers with over 1,000 employees, 600 retail stores and a global presence in China, Hong Kong, Israel, Russia and Ukraine. In January, the company announced



its strategy to expand into other international markets as well as to ship phones in America later in 2014 and Ubuntu will be a key part of this expansion. Meizu designs and retails phones that are characterised by light, comfortable design as well as ease of use and functionality.

Li Nan, Meizu's VP Sales and Marketing commented that: "This partnership gives us an opportunity to develop a truly different and compelling offering that will support our strategy to deliver devices to both China as well as internationally".

Mark Shuttleworth added that more partnerships with other companies are planned for 2015, and that the focus is now on building apps. In particular, the Ubuntu team is working on facilitating the integration of existing html5 and Adobe Cordova apps and services, which are both already fully supported.

Source: <http://ubuntuonair.com/>  
<http://www.ubuntu.com>

Submitted/Written by: **Federico Caiazza**

## DEMAND FOR LINUX SKILLS RISES

**D**emand for people with Linux skills is increasing, a trend that appears to follow a shift in server sales.

Cloud infrastructure, including Amazon Web Service, is largely Linux based, and cloud services' overall growth is increasing Linux server deployments. As many as 30% of all servers shipped this year will be cloud services providers, according to research firm IDC.

This shift may be contributing to Linux hiring trends reported by the Linux Foundation and IT careers website Dice, in a report released Wednesday. The report states that 77% of hiring managers have put hiring Linux talent on their list of priorities, up from 70% a year ago.

The foundation study doesn't explicitly connect the shift in server usage to hiring, but Shravan Goli, the president of Dice, attributed increasing demand for Linux skills to cloud deployments as well as the rise of mobile applications. "A lot of the (mobile) services are built on open source systems," he said.

In the third quarter of last year, Linux servers accounted for 28% of all server revenue, according to the latest IDC market estimate. In the third quarter of 2012, Linux servers represented 21.5% of server revenue.

Dice has about 11,000 Linux job posting on its site, Goli said. "The utilization of the Linux operating system is moving more and more up the stack," he said.

According to the IDC data, losing ground in the server hardware market is Windows, which had 50.3% of all the server hardware factory revenue in the third quarter. The figure was 51.1% in the comparable year ago quarter. Unix systems experienced a revenue decline of more 31% year over year. This was a particularly weak market, however, with the server market declining 3.7% year to year.

Linux is "far and away" the platform of choice for cloud computing deployments, said Charles King, an analyst at Pund-IT. King said the gains in Linux server revenue "would serve as some kind of supporting data for the uptick"

in Linux hiring.

Source:  
[http://www.computerworld.com/s/article/9246456/Demand\\_for\\_Linux\\_skills\\_rises](http://www.computerworld.com/s/article/9246456/Demand_for_Linux_skills_rises)

Submitted By: **Rahul Mehta**

## CHINA'S HOME-GROWN LINUX OS SHUTS

**O**nce the world's second-largest Linux distributor, Red Flag Software has shut reportedly due to mismanagement and after owing employees months in unpaid wages.

China's state-funded answer to global software giants like Microsoft, the Chinese company filed for liquidation over the weekend and terminated all employee contracts. Set up in late-1999 amid the dot-com boom, Red Flag was touted as an alternative to Windows, offering desktop and server OSes built on the open-source Linux platform. It thrived in the early days, inking deals with partners such as Oracle and Dell which products were certified to support and shipped with Red Flag Software.

The Beijing-based vendor was primarily funded by the Chinese Academy of Sciences' Institute of Software Research, and later received additional funding from state-owned Shanghai NewMargin Venture Capital and the Ministry of Information Industry's VC arm, CCIDNET Investment.

Signs that Red Flag was in financial trouble surfaced in April 2013 when employees were told they would not be paid their wages, and the company's headquarters in Haidian district was forced to close in December over unpaid rent and utilities, reported TechWeb.

Source:  
<http://www.zdnet.com/cn/chinas-home-grown-linux-os-shutters-7000026404/>

Submitted By: **Rahul Mehta**

## WILL CHROME OS AND ANDROID DOMINATE THE 2014 LINUX DESKTOP?

**A**ndroid phone and tablet users have now become accustomed to the immense functionalities and

level of comfort that the platform offers

When you give it a thought, it's ironical that the likes of Google would introduce Linux to the broader desktop market. But that's the way it is, not that we are complaining! What really spurred the growth of Linux at the first place was the very terrible response to Microsoft's Windows 8.

It's not everyday that you see traditional Windows users sifting through alternatives. Apple might have been one, but sadly that didn't happen! It's at times like these that Chrome OS and Android grab the limelight. Of course, users of traditional distros like Ubuntu or Linux Mint might beg to disagree.

Chrome OS and Android Desktop are not one hundred percent perfect, being attached to Google makes them liable for privacy concerns, however the fact of the matter still remains they have enough firepower to pull the rug from beneath Microsoft's feet.

Meanwhile, Android phone and tablet users have now become accustomed to the immense functionalities and level of comfort

that the platform offers, therefore, it's only a matter of time that they would dump Windows from their desktops, switching on to the obvious.

At the same time, regular Linux desktop distros like Fedora and Linux Mint should not be left behind. They are only just the tip of the iceberg when it comes to desktop distributions and are immensely wonderful in their own right.

Source:  
<http://www.ciol.com/ciol/news/209348/will-chrome-os-android-dominate-2014-linux-desktop>  
 Submitted By: **Rahul Mehta**

## WHO ACTUALLY DEVELOPS LINUX? THE ANSWER MIGHT SURPRISE YOU

If I tell you to think of an open-source project, the first word that probably comes to mind is Linux. (Bonus points if you thought of Firefox or Apache, but for the sake of argument let's just say that you thought of Linux). Then, if I ask you what open-source actually means, you'd probably say something like:

"Open source means everyone is free to use the code, and it's usually developed by lots of independent programmers, who contribute their work freely, to make the world/internet a better place." That's what I thought, too, until I read The Linux Foundation's somewhat-annual report on the state of the Linux kernel. The report's findings may surprise you.

To begin with, take a look at the chart above (which was compiled by IEEE Spectrum, incidentally). The graph shows the breakdown of all patches contributed to the Linux kernel, between versions 3.0 and 3.10. You can clearly see that over 80% of all contributions are from developers who are paid by a large, commercial company. The report says that the number of unpaid developers contributing to the Linux kernel has been slowly declining for many years, now sitting at just 13.6% (it was 14.6% in the last report).

Unsurprisingly, Red Hat — one of the very few open-source Dot Com success stories — rules the roost. The Linux Foundation reports that, over the past year, there has been a sizable increase from companies that make mobile



and embedded systems (Samsung, Texas Instruments, Linaro). In the previous report, these three companies contributed just 4.4% of the kernel changes — this year, it's up to almost 11%. Linaro, if you haven't heard of it, is a not-for-profit company set up by ARM, Freescale, IBM, Samsung, ST-Ericsson, and Texas Instruments, for the sole purpose of improving Linux's ARM support. Non-profit doesn't mean Linaro developers don't get paid a lot of money, however.

The report also highlights the decreasing amount of direct involvement that Linus Torvalds has with the patching process. Torvalds (the creator of Linux, and still very much the project's overall coordinator) signed off on just 568

patches (0.7%) between versions 3.0 and 3.10. Nowadays, Torvalds has delegated signoffs to subsystem maintainers — most of which are highly paid employees at Red Hat, Intel, Google, and so on.

Finally, the last main factor that the report draws our attention to is the swelling size of kernel's source code. Between Linux 3.0 (July 2011) and Linux 3.10, more than 2.3 million lines of code have been added to the kernel. As of Linux 3.10, there was almost 17 million lines of source code in the Linux kernel (and we're now up to version 3.13, so it has probably swollen yet further). The number of files that make up the kernel has jumped from 37,000 to 43,000, too. When the Linux kernel was first released in 1991, it had just 10,000

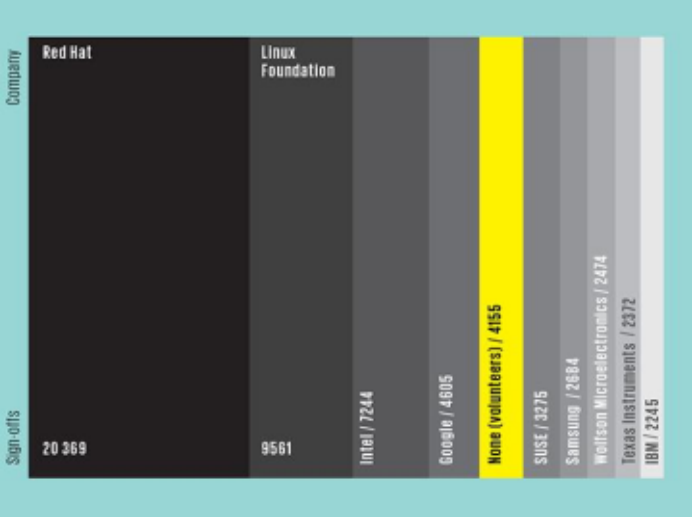
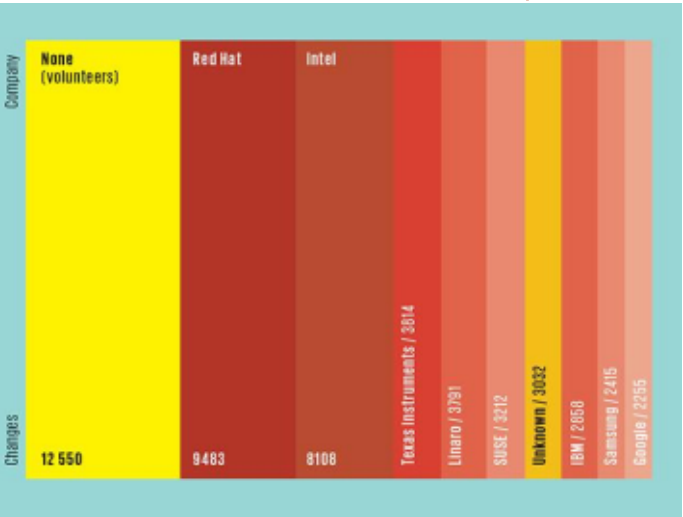
lines of code. For the most part, this inflation is due to drivers and support for new filesystems. During the build process, only the lines of source code that are actually required by your hardware will be compiled, which in reality will be a small fraction of those 17 million lines.

As for why Linux is now mostly developed by well-paid engineers, the possible reasons are myriad. The most obvious and compelling reason is that these big companies have a commercial interest in the continued good health of Linux. 10 years ago, Linux was the plaything of hobbyists and supercomputer makers — today, it powers everything from smartphones (Android) to wireless routers to set-top boxes. The continuing

commercial interest in Linux is highlighted by another statistic from The Linux Foundation report: In mid-2011, only 191 companies were involved in the Linux kernel; by the end of 2013, that number was up to 243.

Really, we should be grateful that these companies don't seem to be skewing the development of Linux towards their own commercial needs. Such is the magic of open source — and the iron fist of Torvalds and his fellow maintainers

Source: <http://www.extremetech.com/computing/175919-who-actually-develops-linux-the-answer-might-surprise-you>  
Submitted By: **Rahul Mehta**





Last month, I wrote an article on using regular expressions within Sed, in an attempt to show my process when creating such expressions. Just before writing this month's article, I received an email from a reader, who shared his solution to the problem (formatting a TaskWarrior file). His solution consisted of using a single Sed statement, and addressing lines of the file specifically. His sed command is shown in the box above right.

His explanation:

- Take care of this one special case with the title line. As there is an address label (1), this substitution is done only for line 1. In sed scripts, a line number matches only that line. I used an address label only for performance purposes - there would be just one single line matching "^ID",
- Another address label (2). This rule is used only for line 2, and the command is branch ("goto"). As there is no label, it means "goto to the end of the script" - simply skip line 2. This is extraneous for the sake of an example.

```
sed -e '
1 s/ID/ID\;/ # do this only for the first line.
2 b # nothing to do for the dash line, start with next line
s/^[0-9]\+ tasks/\;\;\;/ # fix the tasks line
s![0-9]\+/[0-9]\+/[0-9]\+!&\;! # add semicolons after the date
s/( \)\{2,\}/\;/g # now deal with all two+ spaces
'
```

- The third line matches only the "tasks" line.
- The fourth line takes care of the semicolons after the dates, as there will never be two spaces due to right-adjustment. Note that you can also use delimiters other than slashes.
- Finally, take care of the rest. Substitute each at-least-two space combinations with a semicolon and the spaces found. This also applies to the first line (headline).

His solution is certainly more efficient than mine, and is a brilliant example of how there are many solutions to these sorts of problems.

Due to the fact that work has kept me extremely busy the last few weeks, I have decided to not write a typical article for this month. Instead, I'd like to run a vote on what article the readers

would like to see in FCM#84. The reason why it will appear only in FCM#84, is due to the time frame between FCM being released, and my next article being due. The choices are as follows:

- A reader has requested an in-depth article on installing & setting up Rails 4.0.2 on Ubuntu (Ruby on Rails)
- I recently installed ArchLinux to an external hard drive, capable of running on UEFI systems (Windows 8 or Mac OS X machines, mainly)
- Last month I also offered to set up an article with formatting problems to be solved using regular expressions and sed.

Naturally, anyone who has a preferred topic not listed above, is welcome to mark the "other" box, and to give me a brief description. Anyone is also welcome to input their email address in the form, so that I can contact you with

questions about your response. I promise I won't contact you for any other reason. There is also a secondary paragraph text box where you can expand upon your idea.

The link to the form:

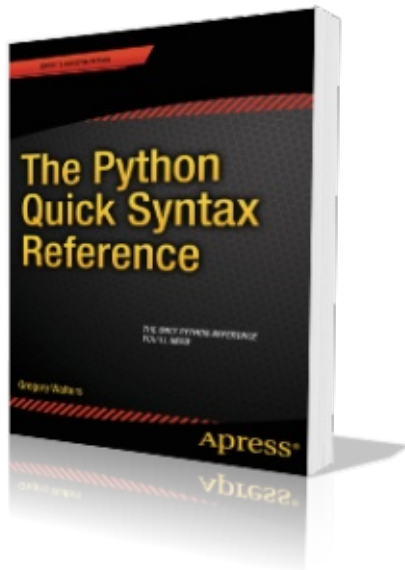
[https://docs.google.com/forms/d/1ZqLOwpwZ-iGkU-LVBDkz65pvO8FK65rIF\\_X2DWGPLmQ/viewform](https://docs.google.com/forms/d/1ZqLOwpwZ-iGkU-LVBDkz65pvO8FK65rIF_X2DWGPLmQ/viewform)

I apologize for not having a complete article for you this month. However, FCM#83 should contain a normal article next month.



**Lucas** has learned all he knows from repeatedly breaking his system, then having no other option but to discover how to fix it. You can email Lucas at: [lswest34@gmail.com](mailto:lswest34@gmail.com).





Before we get started on this month's actual python subject, let me toot my own horn for just a minute. In late December and early January, my first book on Python was published by Apress. It is named "The Python Quick Syntax Reference", and is available from a number of places. You can find it on the Apress site (<http://www.apress.com/9781430264781>), Springer.com (<http://www.springer.com/computer/book/978-1-4302-6478-1>) and Amazon (<http://www.amazon.com/The->

```
SELECT pkgs, Count(DOW) as CountOfDOW FROM study
WHERE (Holiday <> 1)
AND DayName in ("Monday", "Tuesday", "Wednesday", "Thursday", "Friday")
GROUP BY pkgs
```

[Python-Quick-Syntax-Reference/dp/1430264780](#)) as well as others. It is, as the title suggests, a syntax reference that will help those of us who program in other languages as well as Python, to remember how a certain command works and the requirements for that command. Please help a poor old programmer make a living by buying the book, if you can.

Now on to bigger and better things.

While I was working on my latest book for Apress, I rediscovered a SQL command that I didn't discuss when we were working with SQL databases a long

time ago, so I thought I'd share the information with you. It is the CREATE TABLE AS SELECT command, which allows us to pull a query from one table (or joined tables) and create another table on the fly. The general syntax is:

```
CREATE TABLE [IF NOT EXISTS]
{New Table Name} AS SELECT
{query}
```

The part in square brackets (IF NOT EXISTS) is totally optional, which will create the table only if it doesn't exist already. The part in curly brackets, however, is not. The first is the new table name and the second is the query that you want to use to pull data and create the new table.

Assume we have a database that has multiple tables in it. One of the tables is named "study" that holds data from a receiving operation. There are six fields which are shown below.

One of the datasets that we will need to produce from this raw data is a grouping of package count and the number of days within the study that quantity of packages came in on, assuming that the days are weekdays (Monday thru Friday) and that the day is not a holiday, since holidays have less than normal number of packages. Our query is shown above.

This then provides us with data

```
pkID - Integer, Primary Key, AutoIncrement
DOM - Integer - Day of the month (1-31)
DOW - Integer - Day of week (1-7 (Sunday = 1, Monday = 2, etc))
pkgs - Integer - Number of packages received that day
DayName - TEXT - "Sunday", "Monday", etc
Holiday - Integer 0 or 1 (Is this day considered a holiday or not) 1 means yes
```

that would look something like this:

pkgs	CountOfDow
31	1
32	2
33	1
...	
48	3

So the data is showing that during the study of 65 days, only one weekday had 31 packages but 3 weekdays had 48 packages and so on. Similar queries could be created that would cover holidays and weekends.

While having the data simply as a returned dataset from the query, we might want to do further analysis on the data, so we want to put the resulting data from the query into a table. That's why we would create a table from the query. So in the following example, shown above right, we create a table named "weekdays" using the same query we just showed above.

Now anytime we need the data for that weekday result set, we can just run a query on the weekdays table.

Once we know what we need, and have tested the query, then we

```
CREATE TABLE IF NOT EXISTS weekdays AS
SELECT pkgs, Count(DOW) as CountOfDOW FROM study
WHERE (Holiday <> 1)
AND DayName in ("Monday", "Tuesday", "Wednesday", "Thursday", "Friday")
GROUP BY pkgs
```

can begin our code. Assuming we already have the study table created and populated, we can use Python to then create our new table in the main database. Just as an FYI, I am using the APSW SQLite library to do the database work.

We, of course, have to open a connection (right) and create a cursor to the SQLite database. We have covered this in a number of past articles.

Now we need to create the routine that will actually create the table with the returned dataset from the query, shown below, then alter it and run some

```
def OpenDB():
    global connection
    global cursor
    connection = apsw.Connection("labpackagestudy.db3")
    cursor = connection.cursor()
```

calculations.

As you can see, we want to create a second cursor, so that we don't run any risk of the first cursor having data we need to maintain. We will be using it in the final part of the code. We then drop the table if it exists and run our query

on the "study" table.

Now we create three more columns (shown below) within the weekdays table named "probability", "lower" and "upper". We do this by using the "ALTER TABLE" SQL command.

```
addcolquery = 'ALTER TABLE weekdays ADD COLUMN probability REAL'
cursor.execute(addcolquery)
addcolquery = 'ALTER TABLE weekdays ADD COLUMN lower REAL'
cursor.execute(addcolquery)
addcolquery = 'ALTER TABLE weekdays ADD COLUMN upper REAL'
cursor.execute(addcolquery)
```

```
def DoWeekDays():
    # Create a second cursor for updating the new table
    cursor2 = connection.cursor()
    q1 = "DROP TABLE IF EXISTS weekdays"
    cursor.execute(q1)
    query = '''CREATE TABLE IF NOT EXISTS weekdays AS SELECT pkgs,
        Count(DOW) as CountOfDOW FROM study WHERE (Holiday <> 1)
        AND DayName in
        ("Monday", "Tuesday", "Wednesday", "Thursday", "Friday")
        GROUP BY pkgs'''
    cursor.execute(query)
```



The next step (top right) will be to sum the data in the CountOfDOW field.

There is only one record returned, but we do the for loop thing anyway. Remember from the above discussion that the “CountOfDow” field holds the number of days during the study that a particular number of packages came in. This gives us a value that contains the sum of all of the “CountOfDow” entries. Just so you have a reference as we go forward, the number I got from all my dummy data is 44.

```
upquery = "SELECT * FROM weekdays"
```

```
c1 = cursor.execute(upquery)
```

Here we have done a ‘SELECT all’ query so every record in the datatable is in the ‘c1’ cursor. We’ll walk through each row of the dataset, pulling the pkgs (row[0]) and CountOfDow (row[1]) data into variables.

```
LastUpper = .0
for row in c1:
    cod = row[1]
    pkg = row[0]
```

Now we will create a probability of each daily package count in the

database and calculate an upper and lower value that will be used in another process later on. Notice that we check to see if the LastUpper variable contains ‘.0’. If it does, we set it to the probability value, otherwise we set it to the lower plus the probability value.

Finally we use an update SQL statement to put the new computed values into the database.

What we end up with is a package count (pkgs), a count of the number of days that package count came in, a probability of that occurring within the whole of the study (31 packages on 1 day out of a total of 44 (weekdays in that 60+ day study), will have a probability of 0.02.).

If we add up all the probability values in the table it should add up to 1.0 .

The upper and lower values then reflect a number between floating point number 0 and 1 that will mirror the possibility of any random number within that range that will give us a randomized number of packages. This number can then be used for a statistics

```
sumquery = "SELECT Sum(CountOfDOW) as Sm FROM weekdays"
tmp = cursor.execute(sumquery)
for t in tmp:
    DaySum = t[0]
```

```
prob = cod / float(DaySum)
if LastUpper != .0:
    lower = LastUpper
    LastUpper = (lower + prob)
else:
    lower = .0
    LastUpper = prob
```

```
nquery = 'UPDATE weekdays SET probability = %f, \
        lower = %f, upper = %f WHERE pkgs = %d' \
        % (prob, lower, LastUpper, pkg)
u = cursor2.execute(nquery)
#=====
#      End of DoWeekDays
#=====
```

analysis of this data. A “normal real-world” example would be to predict the number of cars that arrive at a carwash based on observational data done in the field. If you want to understand more, you could look at <http://www.algebra.com/algebra/homework/Probability-and-statistics/Probability-and-statistics.faq.question.309110.html> to see an example of this. All we did is generate (the hard part) easily with Python.

The code for the two routines that we presented this time is at:

<http://pastebin.com/kMc9EXes>

Until next time.



**Greg Walters** is owner of RainyDay Solutions, LLC, a consulting company in Aurora, Colorado, and has been programming since 1972. He enjoys cooking, hiking, music, and spending time with his family. His website is [www.thedesignatedgeek.net](http://www.thedesignatedgeek.net).



# HOW-TO

Written by Elmer Perry

Collecting clip art for use in your newsletter, spreadsheet, presentation, or other document can become a timely task. Especially when it comes to organizing – and later finding – the image you want to use. LibreOffice provides a built-in Gallery for collecting and organizing images, sounds, and videos. The Gallery collects files into categories called themes. You can add files from the Gallery directly into your document. Creating new themes allows you to add your own files into the collection.

## THE GALLERY

You can access the Gallery in three different ways, through the menus (Tools > Gallery); by a

button on the standard toolbar; and through a panel on the experimental sidebar. By default, the Gallery is docked under the formatting toolbar. You can undock and dock the Gallery with the combination of CTRL + double-click on the border of the Gallery. Use the hide/show button on the lower border to display and hide the Gallery while it is docked. If you hover over the lower border, your mouse cursor will turn to a double arrow, and you can resize the docked Gallery's height.

On the left side of the Gallery is the themes list. Selecting a theme changes the files which display in the main panel. The main panel shows the files available in the currently selected theme. Above



# LibreOffice Pt35: The Gallery

the main area are two buttons for displaying the files – in tile or detail view. Beside the buttons, it shows the theme name, file name, and path for the selected file.

## USING THE GALLERY

The Gallery allows you to insert a file as a copy, a link, or a background. When you insert the file as a copy, the file is embedded into the current document and is not reliant on another file. If you insert the file as a link, a reference to the file is created in the document. If you opened a document with linked files, the files will show only if they are in the location referenced in the document. If the file needs to travel among multiple computers, insert a copy. If the document will reside on only one computer, you can safely insert a link.

To insert a copy of a file from your Gallery into the document, select the theme containing the file and select the file. You can then drag and drop the file into your document, or right-click the

file and Insert > Copy.

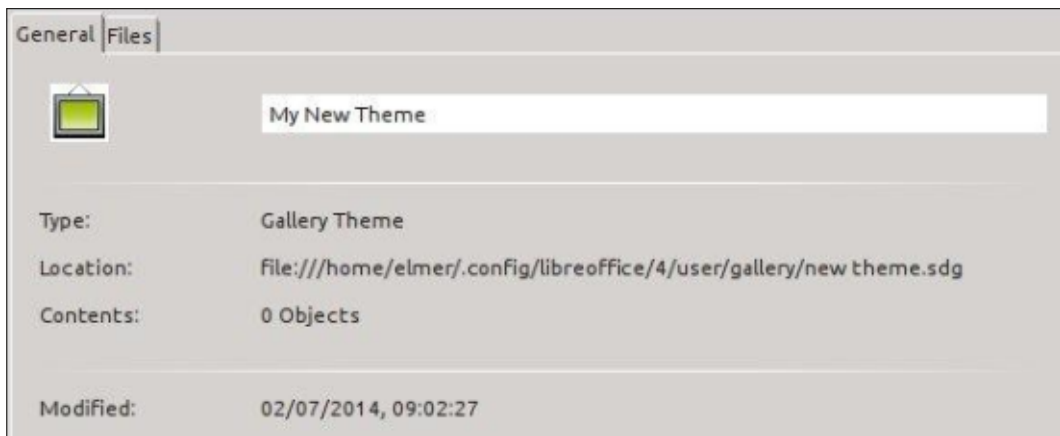
To link a file from your Gallery into a document, select the theme and file. Hold down SHIFT + CTRL while dragging and dropping the file into the document, or right-click then Insert > Link.

Sometimes, you will want to use an image as the background for a page or a paragraph. To set an image as the background for a page, select the theme and image. Right-click the image and Insert > Background > page. To set the image as the background for the current paragraph, right-click the image and Insert > Background > Paragraph.

## MANAGING THE GALLERY

A nice feature of the Gallery is the ability to add your own files to the collection. You cannot, however, add to, remove from, or delete the default themes. In order to add your own files to the Gallery, you will have to create your own themes. You add your own theme by clicking on the “New



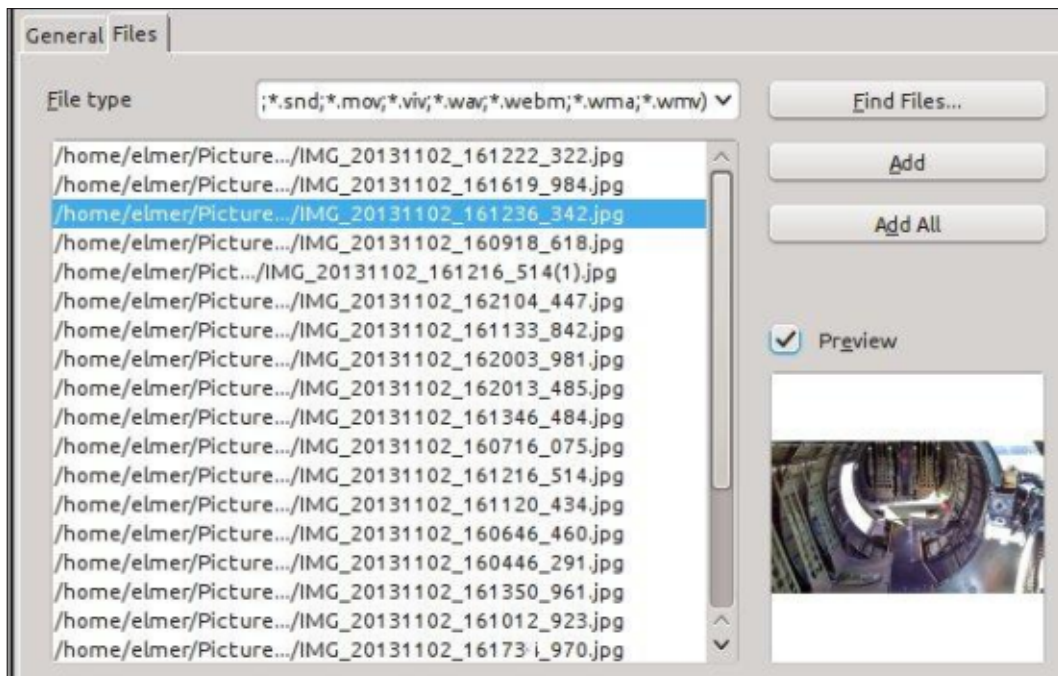


Theme” button, which opens the “New Theme” dialog. In the “General” tab, enter the name for your new theme. You can now add files to your theme in the “Files” tab or just click “OK” to save the theme.

Adding files to the theme you just created is easy. You can add files one at a time by dragging and dropping them into the main panel with your theme selected. To selectively add files or to add an entire folder, right-click on the theme title and click “Properties.” A theme “Properties” dialog will display. This is the same dialog you get when adding a theme, so you can use this method to add files when you create a new theme. Select the “Files” tab, then click “Find Files.” Use the file dialog to navigate to the folder containing

the file(s) you want, and click “Select.” A list of files in the folder will display in the list box. Use the drop-down box above the list to filter the files if needed. Take time to scroll through the filter list to get an idea of the many file formats the Gallery accepts. For image files, you can get a preview by checking the “Preview” check box. Once you find the file you want, you can select it and click “Add” to add it to the theme, or click “Add All” to add all the files in the list box.

You won't always add files to the Gallery with the intention of keeping them there indefinitely. You may want to just add them while working on a certain project. Once the project is done and you no longer need them, you will want to delete the files and themes



created for the project. To delete a file from a theme, right-click the file and select “Delete.” You can also delete a theme with all its files by right-clicking the theme title and selecting “Delete.” Keep in mind that there is no undo for these actions, and that deleting a file from the Gallery does not delete it from the computer, just from the Gallery’s theme list.

LibreOffice provides a media library called the Gallery. The Gallery is divided in collections called themes. You can add your own themes and files to the Gallery. If a file or theme is added

only for a certain project, you can delete them when the project is finished. The Gallery is available in all modules of the suite, and helps you to maintain consistency for newsletters, spreadsheets, presentations, databases, and reports.



**Elmer Perry's** history of working, and programming, computers involves an Apple ][E, adding some Amiga, a generous helping of DOS and Windows, a dash of Unix, and blend well with Linux and Ubuntu. He blogs at <http://eeperry.wordpress.com>



# HOW-TO

Written by Gabriele Tettamanzi

## Connect An iOS Device

I've been fascinated by KDE since I started my Linux experience, but I often use an iPad as a multimedia player; unfortunately KDE – and Kubuntu by consequence - does not support it out of the box as Ubuntu and other derivatives such as Xubuntu, Lubuntu and Ubuntu GNOME do.

Before becoming a Linux user, I downloaded multimedia files on my Windows XP notebook, then moved them to my iPad via iTunes: however, there's no Linux version of iTunes, and neither PlayOnLinux nor Wine are able to run iTunes.

If I'm not mistaken, starting with iOS4, the core directories of the iOS are encrypted while apps directories are not. Luckily these days there are many free or cheap apps, so we can avoid using the encrypted part of the iOS file system by substituting standard iOS function with other apps. On my iPad I use OPlayerHD for podcasts, video and music, and Download as a pdf reader, and the directories where the files are stored for these apps are not

encrypted .

Dolphin, the file manager of KDE, uses software components named kio slave to support connection protocols to various removable devices. Unfortunately there's no official kio slave for the AFC protocol, the one required to connect to an idevice. There are a couple of source packages available, like kio\_afc, which require compiling, and, in my understanding, are orphaned; another option could be the virtualization of an operating system "iTunes compatible", but we need to buy a license for the operating system we virtualize, and every time we want to transfer a file we need to boot the virtual machine.

I've found two alternative solutions, the first via a CLI, and the second – a simpler solution – via the LXDE/Lubuntu file manager, PCManFM.

Important tip: depending on iOS and idevice version, you may need to remove the access code (a 4

digit code) from your idevice to get the two connection methods working: it's an option in the General settings of your idevice – you can easily set it up again after the connection with Kubuntu is done.

### FIRST SOLUTION (CLI): IDeviceINSTALLER AND IFUSE

First, we need to install ifuse and ideviceinstaller. In a terminal type:

```
sudo apt-get install ifuse
ideviceinstaller
```

Then plug in the iPad via a cable. In a terminal type:

```
ideviceinstaller -l
```

The output is a list of all appid and names off the apps installed; my list is:

```
Total: 7 apps
com.google.GoogleMobile -
Google 3.0.2.20993
com.olimsoft.oplayer.hd.lite
- OPlayerHD Lite 2.0.13
ch.smalltech.ledtorchfree -
LED Torch 1.41
com.demandviaspeech.dvs -
```

```
Download 3.0
com.trautvetter.atomicbrowser
- Atomic Web 7.0.1
com.apple.iBooks - iBooks
1929
com.m-w.dictionaryipad -
Dictionary 2.1
```

As an example, I want to move some stuff from the notebook to the iPad, a podcast to OplayerHD, and some pdf files to Download; I need the information I've marked in bold characters, which are named appids, to mount the iDevice directories by ifuse later on.

On Kubuntu I create a directory ~/iPad (here CLI commands, the directories can also be created with Dolphin):

```
mkdir ~/iPad
```

Then I create one directory for every app directory I want to mount, 2 in my example.

```
cd ~/iPad
mkdir OPlayerHD
mkdir Download
```





# HOWTO - CONNECT AN IOS DEVICE

Now I can mount the apps Documents directories with ifuse, using the appids I retrieved from ideviceinstaller -l command, the bold ones in the list above:

```
ifuse -appid  
com.olimsoft.ooplayer.hd.lite  
~/iPad/OPlayerHD
```

```
ifuse -appid  
com.demandviaspeech.dvs  
~/iPad/Download
```

The trick is done; if I type:

```
ls ~/iPad/OPlayerHD
```

I see the list of files and directories I have on my iPad, and Dolphin can navigate to these directories.

Shown right is one screenshot with Dolphin and a terminal showing one mounted iPad directory.

After we have moved our files, it's time to unmount the iPad. In Dolphin we leave the directories we have mounted with ifuse, and in a terminal type:

```
cd ~  
sudo umount ~/iPad/*
```

This mounting process is quite easy: once we have made the directories we need and have chosen the appids, it can be automated with a simple script that lists all the "ifuse -appid" instructions and the execution of the script can be added as an action to the Device notifier.

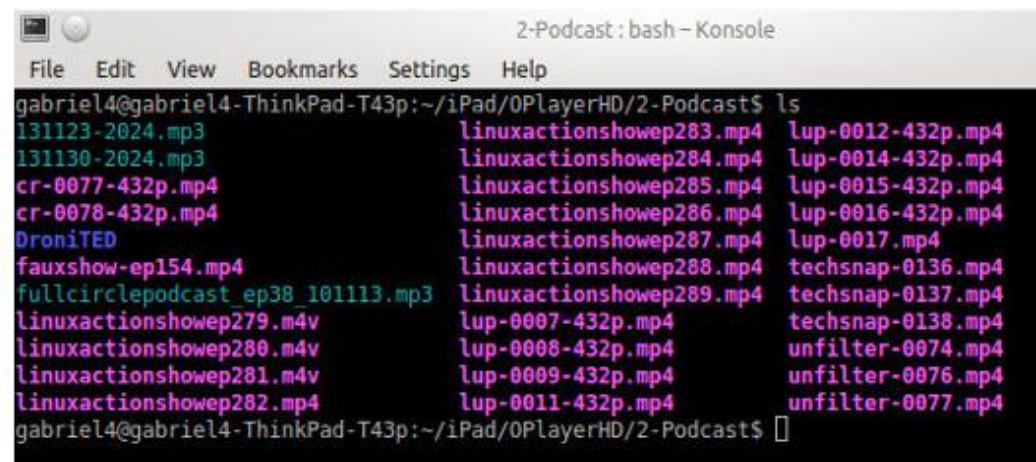
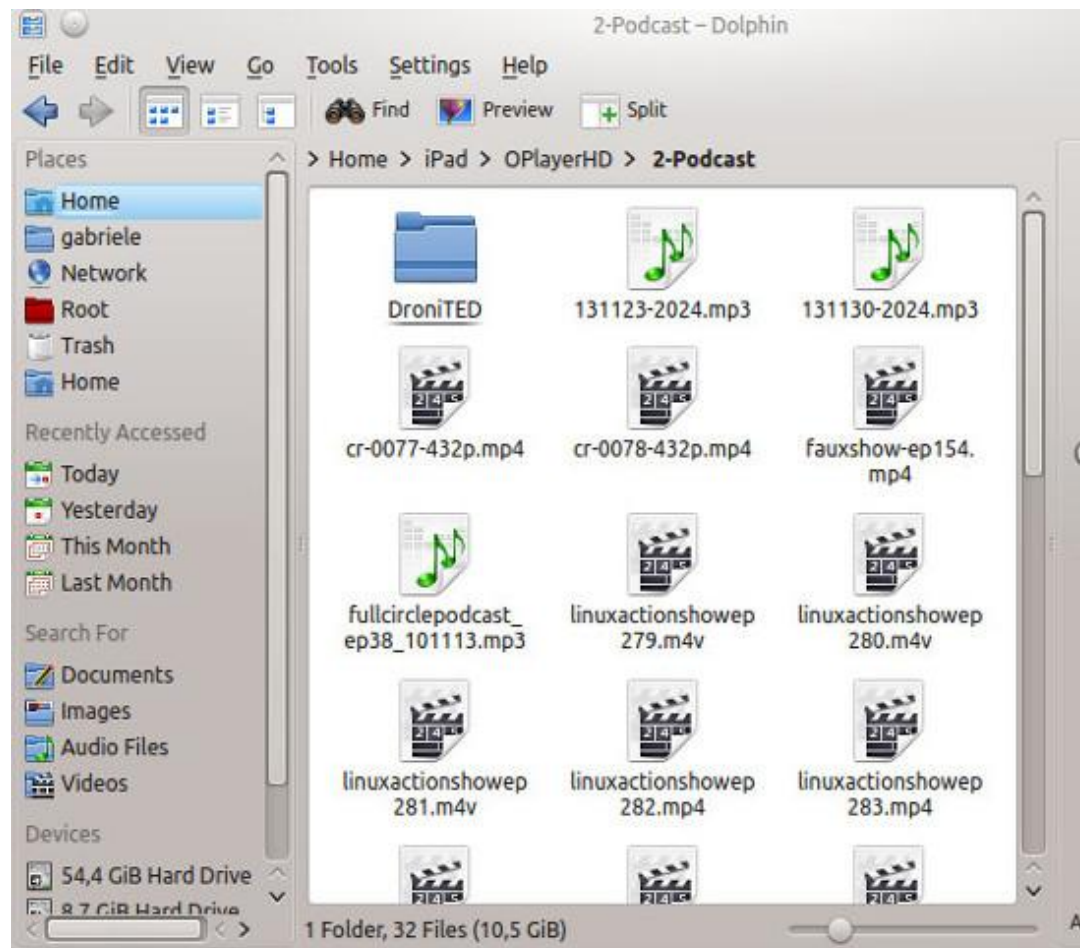
I suggest this solution if you prefer to work by CLI and if you do not change the apps on your device very much.

## SECOND SOLUTION (GUI): FILE MANAGER PCMANFM

We cannot connect directly to the idevice with Kubuntu because Dolphin does not support the AFC protocol, though there are other file managers which do so, such as PCManFM, the default file manager in Lubuntu.

The best solution I've found is to install the qt version of PCManFM: it looks nice integrated in Kubuntu.

The standard version of pcmanfm – installable without adding ppa's and based on gtk – at the time of writing does not show





# HOWTO - CONNECT AN IOS DEVICE

the icons if it's launched as an action of Device notifier.

We need to install the package `pcmanfm-qt`, available in the `Lubuntu daily builds ppa`. First we add the ppa:

```
sudo repository-apt-add
ppa:lubuntu-dev/lubuntu-daily

sudo apt-get update
```

Then we install the package:

```
sudo apt-get install pcmanfm-qt
```

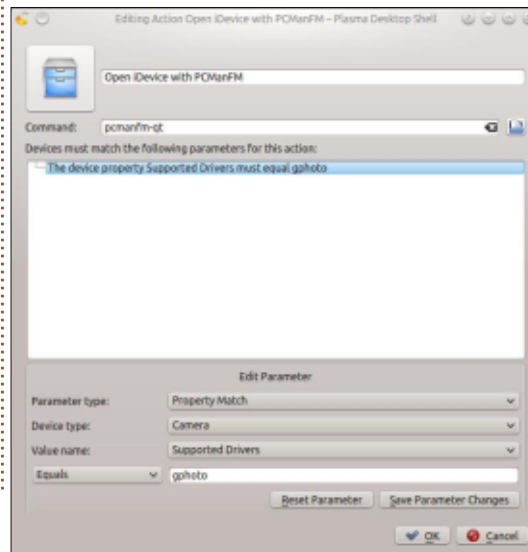
PCManFM supports AFC protocol, and once it's installed, it is possible to mount, manage directories and files, and unmount directly via PCManFM.

It's nice to set up a device notifier action that opens PCManFM when your iDevice is connected. My iPad and also a couple of other iDevices I tested are detected as cameras, so we can set up a device notifier action this way:

Device notifier settings (right click on the icon) > Device actions > Add

Then fill the mask you are presented with:

- icon: click on it to choose an icon you like (my choice: standard file manager icon)
- title: this is the entry we will see in the actions list of the device notifier, it's the first field at the top of the mask, type what you like (my title: 'Open iDevice with PCManFM')
- field Command: type 'pcmanfm-qt'
- field Parameter Type: choose 'Property Match'
- field Device Type: choose 'Camera'
- field Value Name: choose 'Supported Drivers'
- choose 'Equals' from last choice list and type 'gphoto' in the field aside



Then save these parameters by clicking on 'Save Parameter Changes' and then OK twice.

Below left is a picture of my settings.

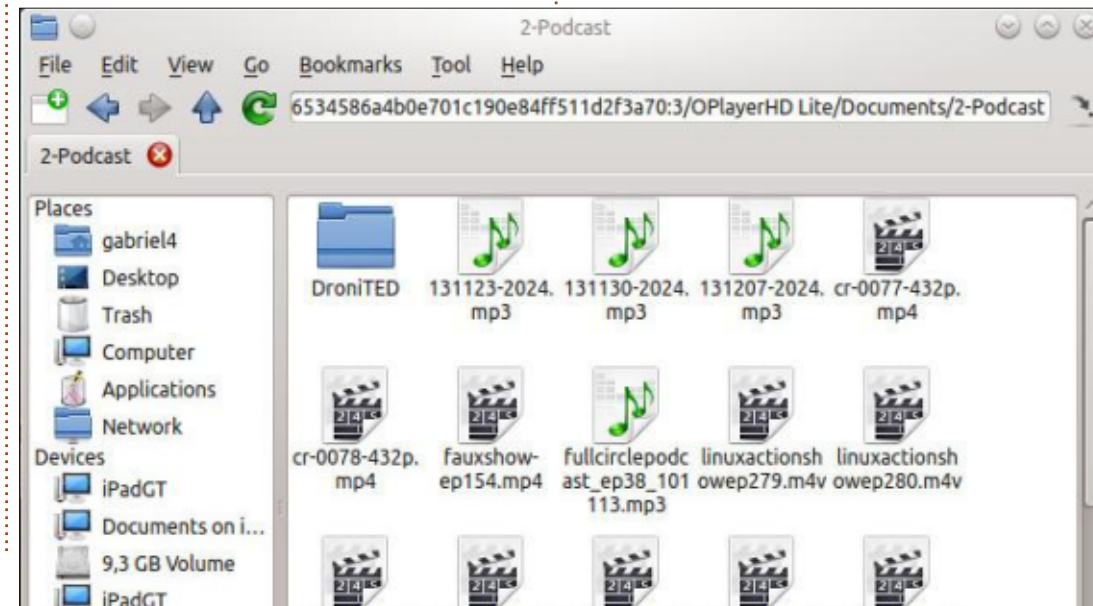
If you did everything right, when you plug in your iDevice, a new action will be available in the list presented by the device notifier; when you click on it, PCManFM is launched.

On the left side list of PCManFM, under Devices, you will see two entries such as "iPad" and "Documents on iPad"; "Documents on iPad" gives us access to the apps' Documents directories.

When you are done with iDevice file managing, make sure to unmount the iDevice, by right clicking on the iDevice names.

Below right is a picture of PCManFM and my iPad apps directories - my iPad's name is iPadGT, so I have iPadGT and "Documents on iPadGT" in the devices list.

I'm using this last method, and I'm quite satisfied with its behavior, even if an error message pops up occasionally while I'm unmounting the iPad device, since this does not affect the unmount operation.





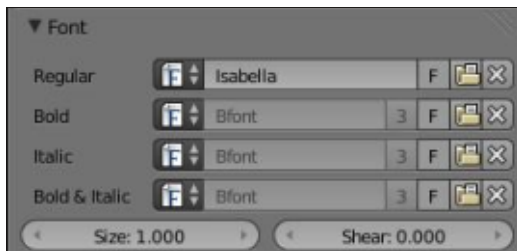
# HOW-TO

Written by Nicholas Kopakakis

## Blender Pt 10b

Last month we created a text object, and we manipulated it (rotate, scale etc.) Now let's see some other adjustments that blender gives us.

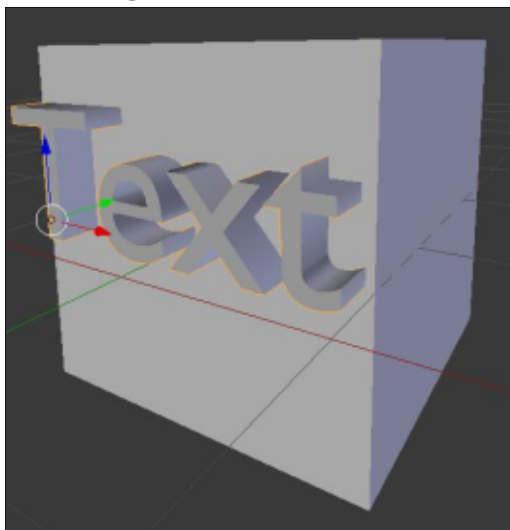
On the right, under the F tab, we have as you remember from last month, all the good stuff to alter our font object. We will stay with the basics for now, although blender giving us many tweaks. So, under Font, we have Size and Shear. You can make your text bigger or smaller by altering the size value, and you can shear your text to the left by giving a negative value to Shear or to the right with positive values.



Also, under Shape, you can change the resolution of your text object or the Fill of your text. Experiment with these and you'll understand them better than I can explain to you.

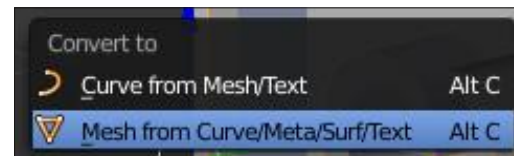


Now, let's start a new project to examine something else (I will explain later why we have to create a new project for this example). Don't delete the cube, just move it a little and add a new text object by pressing Shift-A! Text or by the menu under the Add button (you know these things by now!). Rotate the text object to face the front view, and increase the extrude value under the F tab to 0,5. Move your objects (text and cube) until you have something like the image below:

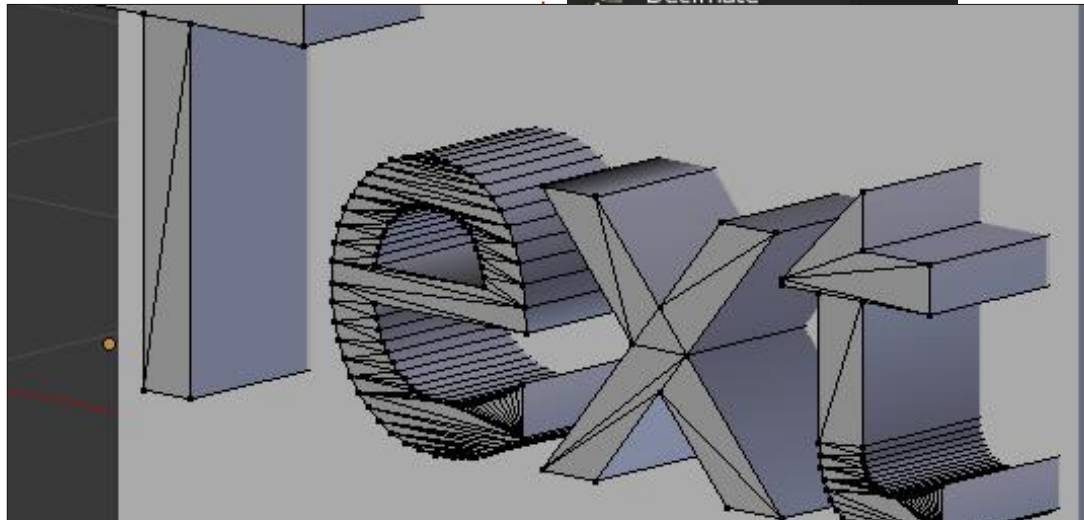


It is critical for our example that the two objects intersect.

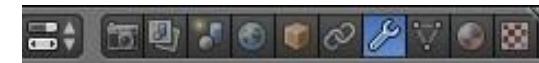
Now, it is time for something interesting. With the text object selected, press Alt-C. From the menu that pops-up, select Mesh from Curve/Meta/Surf/Text.



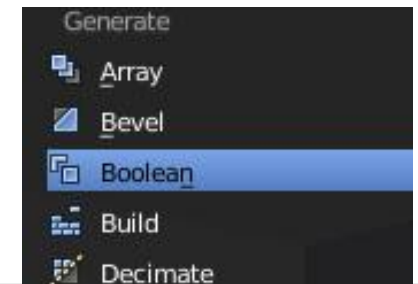
Something very interesting just happened. Blender created a mesh object that you can manipulate just like any other object. Press the tab key to enter edit mode, and see for yourself what I am talking about.



The reason that I converted the text object to a mesh object is to use a modifier that I really like and I want to challenge you to experiment with – the boolean modifier. So, let's select our cube and select the modifier tab.



Add a new modifier called Boolean.



Under the Operation choose Difference, and under Object select your Mesh object that you created from Text (I didn't rename it so it's called "Text"). Then hit Apply.



After a while, depending on your machine's power and memory, the boolean operation will be completed. Now, if you move the text or the cube you can see what we created.

Blender has calculated the difference between the two mesh objects and cut-out the object on which we applied the boolean modifier.

If we had tried it with a more complex object, such as the 'Full Circle Magazine' text (with an elegant font and with the curves that we had applied), blender would have crashed. That's why, for our example, we used a much

simpler text object. Also, the convert-to-mesh command would have been more demanding for blender to handle.

But, the boolean modifier is very useful and very light – if you have simple objects as cubes or pyramids, for example.

For this month, I would suggest <http://gooseberry.blender.org/>. It is a new project that the blender institute has just started.

Next month, we will continue with text, but this time we will introduce a little bit of movement

called animation. We will try something like the Star Wars introduction: "A long time ago in a galaxy far, far away..."

Enjoy!



**Nicholas** lives and works in Greece. He has worked for a post-production house for several years and migrated to Ubuntu because "it renders faster." You can email him at: [blender5d@gmail.com](mailto:blender5d@gmail.com)







# HOW-TO

Written by Mark Crutch

## Inkscape - Part 22

Over the course of the previous 21 articles, I've introduced the majority of the tools on Inkscape's main toolbar. There are a few, however, that have yet to be described. This is mainly because I've found them to be less than useful to the work I do with Inkscape, but you may find them invaluable. As usual, the only way to know is to use them yourself, so, over the next few instalments, I'll do my best to give them a fair introduction, starting with the Tweak Tool (shown right).



With the "T" keyboard shortcut already assigned to the Text Tool, the recently added Tweak Tool has had to make do with "W" (or Shift-F2). Its purpose, as suggested by the name, is not to draw or create new objects, but rather to tweak existing ones. Its tweaks fall into three separate modes: objects, nodes and properties. The user interface doesn't really distinguish between them, but without understanding this hidden

distinction, it's easy to become confused about what the tool actually does.

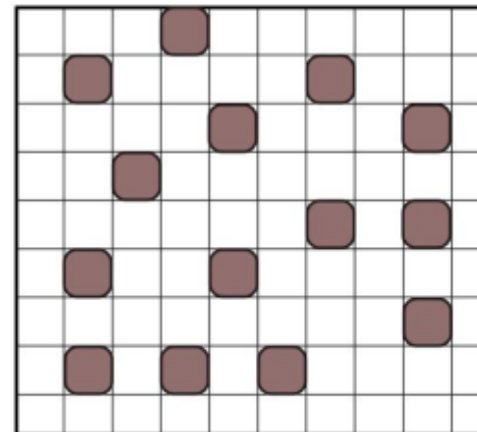
**Objects:** The Tweak Tool can be used to move, rotate and scale individual objects on the canvas.

**Nodes:** When used on a path, the tweak tool can be used to move nodes around, sculpting the path shape in ways that can be difficult to do with other tools.

**Properties:** The tool can be used to change the color of objects and the amount of blur applied to them.

Before diving in to describe the individual tweaks that the tool offers, we first need some objects to experiment on. Create a few small rectangles, circles or stars on the page in a fairly random arrangement. A quick way to do this is to draw one, then drag it around whilst "stamping" it onto the canvas using the Space bar. Whatever approach you take, you

want to create a random cloud of objects. For my example, I've dialled down the randomness by using Extensions > Render > Grid... on a larger rectangle before manually placing my objects. This is simply to make the sometimes subtle effects of the Tweak Tool stand out better.



Before using the Tweak Tool you first have to select some objects for it to work on. Select some of your cloud of objects, but leave a few unselected (or deselect them with a Shift-click afterwards). Now switch to the Tweak Tool using the toolbar icon or one of the

keyboard shortcuts, and take a look at the tool control bar (shown below).

The Width slider sets the size of the tool, and is reflected by a circle around the cursor on the canvas. This circle can be thought of as being like a soft brush in a bitmap editor – the effect is strongest at the center, lessening gradually as you move out towards the circumference. Large sizes allow you to change many objects or nodes at once, though smaller sizes provide finer control. The Force slider allows you to set the strength of the tweaking effect.

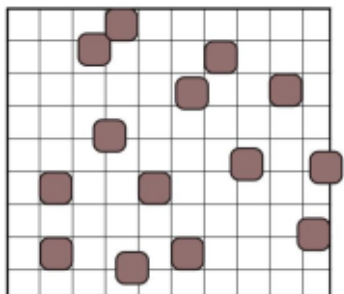
It's possible to change the width and force using keyboard shortcuts, even while drawing. The Left and Right arrow keys change the width, while Up and Down change the force, and the Home and End keys move the width slider to its extremities. If you're using a pressure-sensitive graphics tablet, significant control of the force can be achieved by enabling the button



to the right of the slider, allowing you to control the strength of the force parameter with pen pressure.

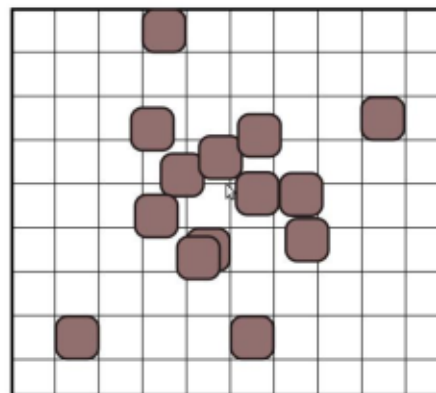
The Mode section contains buttons to select the specific type of tweaking operation you wish to perform. These are radio buttons – only one can be selected at a time. The first six buttons affect objects, the next four affect nodes, and the last three change properties. The Fidelity field seems to apply only to the node editing tweaks, despite remaining enabled when the object tweaks are selected. The Channels radio buttons apply to the two color-related property tweaks, and remain disabled for all others.

Starting from the left, the first of the object tweaks simply moves the selected objects around when they're touched by the tool. Selecting a few of the test objects and randomly scribbling around with the tool results in something like this:



If you move the cursor slowly, or have the force set high, you can use this mode to push objects around indefinitely. By quickly swiping over objects with the force set low, you impart just a small nudge to their positions with each pass.

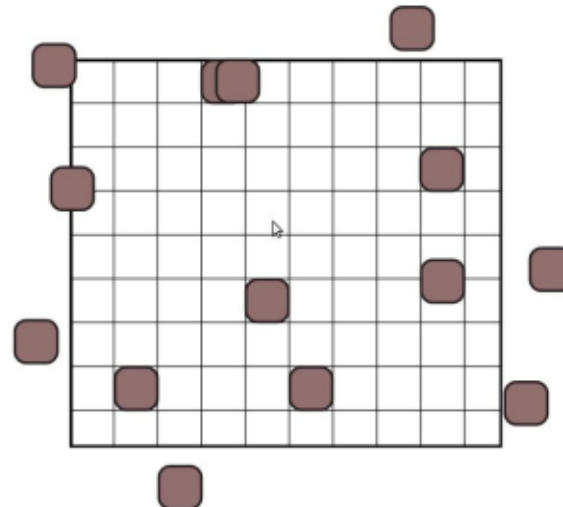
The second radio button invokes a different move mode. In this case the objects are moved towards the cursor, or away from the cursor if the Shift key is held. This is best demonstrated using a very large width setting, so that all the selected objects are within the tool's brush area. By slightly moving the cursor at the middle of the grid, you can see that the selected objects have all moved towards the center (see image below left), while the image below



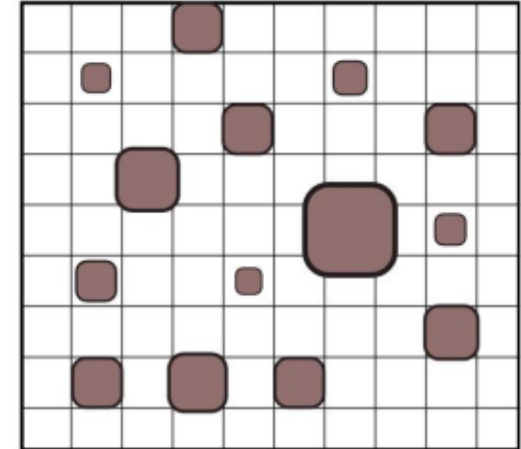
right shows the effect with the Shift key held.

The third tweak tool moves the selected objects randomly – that is, by a random amount in a random direction. The maximum distance is constrained by the force setting. This tool can be used with a large width brush to affect many objects at once, but can also be used to more subtle effect with a small width to introduce just a little randomness into the positions of a few of the selected objects.

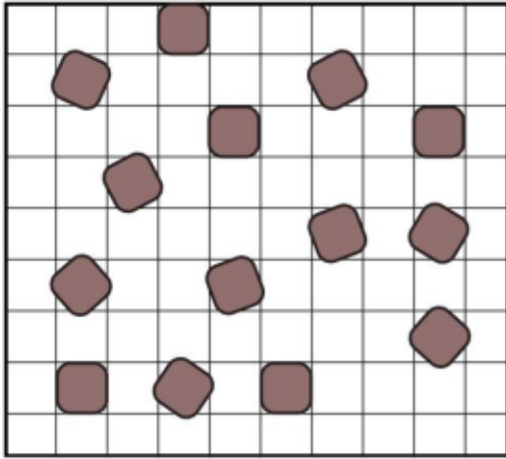
The fourth tool shrinks objects, or grows them if you hold Shift. Again, a large width can be used to shrink or grow several objects at once, while a smaller brush allows you to modify things with more



selectivity. For this example I chose a small width, then wandered around my selected objects pressing and releasing Shift in order to shrink some, grow others, and leave the unselected objects at their original size.



The last of the object-related tweaks changes the rotation of your selected objects. The default is to rotate them clockwise, but as you may have guessed you can hold Shift to rotate them anti-clockwise instead. The Force parameter sets the speed at which the objects will be rotated, though there's no mechanism to constrain the amount to ensure just a little variation, nor to rotate by a random amount to produce more radical results in a single swipe.



The last of the object tweaking tools is, in my opinion, one to avoid. It duplicates the selected objects as you draw over them, or deletes them when Shift is held. Unfortunately, each duplicate is placed perfectly on top of the original, so if your original object is opaque it's impossible to see how many duplicates have been created. It's too easy to accidentally create many hundreds of objects with this mode, especially if the force parameter is large. If you want to create a small number of duplicates then Edit > Duplicate (Ctrl-D) is a better option. For lots of duplicates, Inkscape's "Create Tiled Clones..." dialog is a better option. Even the deletion mode of this tweak is equally well served by the Eraser tool. Clones and the Eraser tool will

be described in more detail in future articles.

I'm going to skip over the node tweaking tools and return to them next time. I'm jumping straight to the three property tweaks because these are applied to selected objects rather than nodes, so I can continue to use the same example image to demonstrate their use.

The first of these tweaks is the eleventh mode button on the toolbar. Its tooltip claims that it "Paints the tool's color upon selected objects", but in my experience it's a little buggy (at least on my 0.48.4 installation). The tool's color can be found at the top right of the tool control bar, to the right of the "Channels" buttons. In theory, it should be possible to set the fill and stroke for the tweak tool while the color button is active, either using the palette at the bottom of the screen, or the Fill and Stroke dialog. In practice however, it's possible to set a fill color, but doing so will set the stroke to black. Setting the stroke to a color will set the fill to "None", which has the same effect as having it set to black when you actually use the tool. When used on objects that have only a fill, it can

be used to change the fill color without modifying the stroke. When used on objects that have only a stroke, it can be used to change the stroke without modifying the fill. But if your objects have both, be very careful when using this tweak unless you want one or the other to tend towards blackness.

With that warning out of the way, using the tool is as simple as selecting the mode button, picking a target color, then painting over the selected objects. They will incrementally change towards the selected color, with the speed of the change being determined by the tool's force setting. If you hold the Shift button, the inverse of the selected color will be used as the target. This also applies to the errant black fill or stroke, which will become a white target instead.

The penultimate button also affects the color of the selected objects, but does so by randomly jittering the color values by a small amount. As you might expect, the maximum size of this amount is set by the tool's Force. For both these color-changing tweaks, you can further limit the effect using the Channels buttons, labelled H, S, L

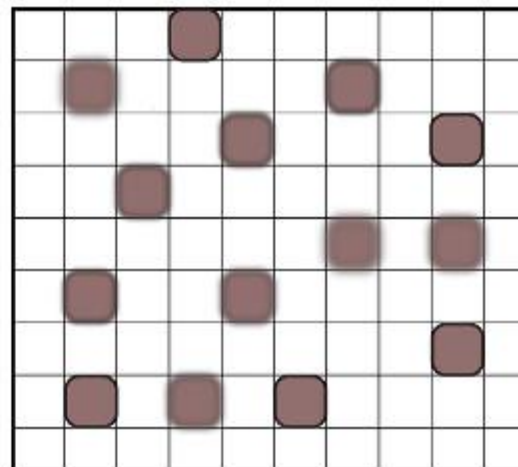
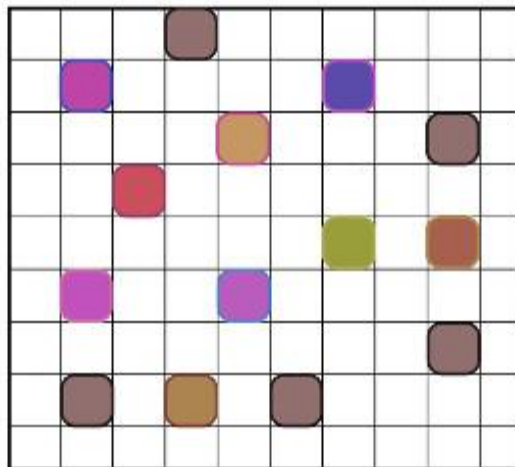
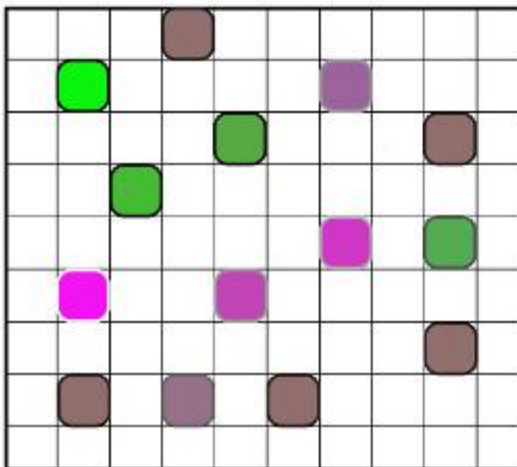
and O, which correspond to Hue, Saturation, Lightness and Opacity respectively. If you want to randomise the opacity of your objects while keeping their colors intact, for example, you should disable all but the O button before painting with the tool.

The last tweak changes the blur of the selected objects, increasing it as you swipe over them, or decreasing it when the Shift key is held. This is best used with a small value for the Force parameter, otherwise it's easy to blur objects so quickly that they virtually disappear into a puff of smoke – or rather into a slight smudge that's barely visible on the screen.

The image on the following page shows all three of the property tweaks applied to the test image. The target color for the first test was bright green, resulting in bright pink for the inverse color. Compare this "directed" change of color with the more random selection in the second image. The third example shows different levels of blur as the result of setting a small Force value and drawing repeatedly over several of the objects.



Between the “objects” and “properties” modes, the tweak tool offers a wide range of ways to add a little variation to otherwise homogeneous collections of shapes. Unfortunately it's not possible to combine multiple tweaks at the same time in order to move, rotate, shrink, color and blur some objects all in a single operation. Being able to do so would make more sense of the duplicate mode – consider duplicating and randomising the position at the same time – but the tool offers no such facility, somewhat neutering its object manipulating abilities. Where the tweak tool is perhaps at its most useful, however, is in dealing with nodes in a path, which will be the subject of the next part of the series.



**Mark's** Inkscape created webcomic, 'Monsters, Inked' is now available to buy as a book from <http://www.peppertop.com/shop/>



The Ubuntu Podcast covers all the latest news and issues facing Ubuntu Linux users and Free Software fans in general. The show appeals to the newest user and the oldest coder. Our discussions cover the development of Ubuntu but aren't overly technical. We are lucky enough to have some great guests on the show, telling us first hand about the latest exciting developments they are working on, in a way that we can all understand! We also talk about the Ubuntu community and what it gets up to.

The show is presented by members of the UK's Ubuntu Linux community. Because it is covered by the Ubuntu Code of Conduct it is suitable for all.

The show is broadcast live every fortnight on a Tuesday evening (British time) and is available for download the following day.

[podcast.ubuntu-uk.org](http://podcast.ubuntu-uk.org)



# HOW-TO

Written by Ronnie Tucker

# Write For Full Circle Magazine

## GUIDELINES

The single rule for an article is that **it must somehow be linked to Ubuntu or one of the many derivatives of Ubuntu (Kubuntu, Xubuntu, Lubuntu, etc).**

## RULES

• There is no word limit for articles, but be advised that long articles may be split across several issues.

• For advice, please refer to the **Official Full Circle Style Guide:**  
<http://url.fullcirclemagazine.org/75d471>

• Write your article in whichever software you choose, I would recommend LibreOffice, but most importantly - **PLEASE SPELL AND GRAMMAR CHECK IT!**

• In your article, please indicate where you would like a particular image to be placed by indicating the image name in a new paragraph or by embedding the image in the ODT (Open Office)

document.

• Images should be JPG, no wider than 800 pixels, and use low compression.

• Do not use tables or any type of **bold** or *italic* formatting.

If you are writing a review, please follow these guidelines :

When you are ready to submit your article please email it to:  
[articles@fullcirclemagazine.org](mailto:articles@fullcirclemagazine.org)

## TRANSLATIONS

If you would like to translate Full Circle into your native language please send an email to [ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org) and we will either put you in touch with an existing team, or give you access to the raw text to translate from. With a completed PDF, you will be able to upload your file to the main Full Circle site.

## REVIEWS

### GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

- title of the game
- who makes the game
- is it free, or a paid download?
- where to get it from (give download/homepage URL)
- is it Linux native, or did you use Wine?
- your marks out of five
- a summary with positive and negative points

### HARDWARE

When reviewing hardware please state clearly:

- make and model of the hardware
- what category would you put this hardware into?
- any glitches that you may have had while using the hardware?
- easy to get the hardware working in Linux?
- did you have to use Windows drivers?
- marks out of five
- a summary with positive and negative points

**You don't need to be an expert to write an article - write about the games, applications and hardware that you use every day.**





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# ASK THE NEW GUY

Written by Copil Yáñez

Hi, everyone! Welcome back to Ask the New Guy!

If you have a simple question, contact me at [copil.yanez@gmail.com](mailto:copil.yanez@gmail.com).

Today's question is:

Q: My friend told me about this really cool video game called *Eve Online*. Apparently there was a huge space battle recently, and I want to play. Can I do that on Ubuntu?

A: Pull up a chair, son. Pappy's gonna tell you about the Battle of B-R5RB. Many brave pilots lost their lives in an epic space battle that lasted 21 hours and resulted in the destruction of warships worth hundreds of thousands of dollars in real world money. It was disastrous for the losing side, and the winners didn't fare much better after watching hundreds of man-hours (invested in building and fielding the largest ships in the Eve galaxy) go up in a strobing flash of laser weapons and missile impacts.

The bloody battle was not only horrifically destructive, it was also eerily beautiful. Take a look for yourself, but be warned, the following image is not for the faint of heart. Look away now if you have a delicate constitution.

Here, in all its deadly beauty, is the Battle of B-R5RB.

If you haven't played Eve Online, or Spreadsheets in Space, as some people call it, you could be forgiven for thinking that videogames are happy, safe affairs – with linear leveling schemes, liberal reward mechanics, and friendly AI to challenge, but not frustrate, you.

That's not Eve Online. If Angry Birds is the funny neighbor kid who always races you to the bus stop, Eve Online is Chad, the home-schooled MENSA kid who never goes past the overgrown weeds in his front yard, and stares at you from behind stained curtains with a homicidal glint in his eyes. Eve Online is the game parents threaten their kids with if they miss

B-R5RB

Copil Yanez

Comments

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View

Insert

Format

Data

Tools

Help

All changes saved in Drive

S

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123

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3

A	B	C	D	E	F	G	H	I	J
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7	21	2.625	2625	2.63E+19	40384615384.6154	5048076923.07692	5048076923076.92	5.05E+28	7.77E
11	33	4.125	4125	4.13E+19	63461538461.5385	7932692307.69231	7932692307692.31	7.93E+28	1.22E
15	45	5.625	5625	5.63E+19	86538461538.4615	10817307692.3077	10817307692307.7	1.08E+29	1.66E
19	57	7.125	7125	7.13E+19	109615384615.385	13701923076.9231	13701923076923.1	1.37E+29	2.11E
23	69	8.625	8625	8.63E+19	132692307692.308	16586538461.5385	16586538461538.5	1.66E+29	2.55E
27	81	10.125	10125	1.01E+20	155769230769.231	19471153846.1538	19471153846153.8	1.95E+29	3.00E
31	93	11.625	11625	1.16E+20	178846153846.154	22355769230.7692	22355769230769.2	2.24E+29	3.44E
35	105	13.125	13125	1.31E+20	201923076923.077	25240384615.3846	25240384615384.6	2.52E+29	3.88E
39	117	14.625	14625	1.46E+20	225000000000	281250000000	281250000000000	2.81E+29	4.33E
43	129	16.125	16125	1.61E+20	248076923076.923	31009615384.6154	31009615384615.4	3.10E+29	4.77E
47	141	17.625	17625	1.76E+20	271153846153.846	33894230769.2308	33894230769230.8	3.39E+29	5.21E
51	153	19.125	19125	1.91E+20	294230769230.769	36778846153.8462	36778846153846.2	3.68E+29	5.66E
55	165	20.625	20625	2.06E+20	317307692307.692	39663461538.4615	39663461538461.5	3.97E+29	6.10E
59	177	22.125	22125	2.21E+20	340384615384.615	42548076923.0769	42548076923076.9	4.25E+29	6.55E
63	189	23.625	23625	2.36E+20	363461538461.538	45432692307.6923	45432692307692.3	4.54E+29	6.99E
67	201	25.125	25125	2.51E+20	386538461538.462	48317307692.3077	48317307692307.7	4.83E+29	7.43E
71	213	26.625	26625	2.66E+20	409615384615.385	51201923076.9231	51201923076923.1	5.12E+29	7.88E
75	225	28.125	28125	2.81E+20	432692307692.308	54086538461.5385	54086538461538.5	5.41E+29	8.32E
79	237	29.625	29625	2.96E+20	455769230769.231	56971153846.1538	56971153846153.8	5.70E+29	8.76E
83	249	31.125	31125	3.11E+20	478846153846.154	59855769230.7692	59855769230769.2	5.99E+29	9.21E
87	261	32.625	32625	3.26E+20	501923076923.077	62740384615.3846	62740384615384.6	6.27E+29	9.65E
91	273	34.125	34125	3.41E+20	525000000000	656250000000	656250000000000	6.56E+29	1.01E
95	285	35.625	35625	3.56E+20	548076923076.923	68509615384.6154	68509615384615.4	6.85E+29	1.05E
99	297	37.125	37125	3.71E+20	571153846153.846	71394230769.2308	71394230769230.8	7.14E+29	1.10E
103	309	38.625	38625	3.86E+20	594230769230.769	74278846153.8462	74278846153846.2	7.43E+29	1.14E

Sheet1

curfew or don't eat their broccoli.

Intrigued? Thought so. See, no matter how bad you make Eve sound, there is no way to adequately describe just how dastardly it can be. Or how fun.

Eve is a massive online world where you play the role of a space captain or, more specifically, a "capsuleer." You are a clone who boards her capsule which is then loaded into any ship you can afford and have the skill to fly. Every new capsuleer gets a free ship, and if that one gets destroyed, it's immediately replaced with another. Your capsule remains intact so you can make it back to your home station and start fresh. If you're not careful, though, your capsule can also be destroyed, but since you're a clone, you simply wake up in the med-bay in a new body, ready to start all over. What's more, you start off in "hi-sec," or high-security space. If anyone tries to shoot you here without provocation, CONCORD (the Eve police force) will destroy your attacker.

Seems pretty forgiving, right? Yeah, no. Once you undock from your home station, you are in a

persistent world with 50,000 of your closest enemies, all of them looking for a way to increase their ISK (the in-world currency that can buy those fancy ships you see in the distance). One way to do that is to destroy another player's ship and steal anything he might be carrying. And forget about CONCORD. Sure, your enemy may not get to linger on his kill for very long before he's dispatched himself, but as Batman's butler pointed out, some people just like to watch the world burn. And apparently all of them play Eve.

So far, Eve sounds like a game designed by Hannibal Lecter, right? And yet, game subscriptions have increased every year since the game was released over a decade ago. This despite the fact that it bucks the free-to-play and micro-transaction trends so popular in multiplayer games these days in favor of a \$19 per month subscription model. There can't possibly be that many rich serial killers out there, can there?

I decided to find out, and in the process determine if the game is playable under Ubuntu. Not surprisingly for a game with such a hardcore following, I discovered a

dedicated community of GNU/Linux enthusiasts with borderline personality disorders and a love of spreadsheets. I also discovered my new obsession.

Getting the game to work under Ubuntu was not the easiest thing I've done, but it wasn't the hardest by a long shot. The best write-up and instructions I found are here: [https://wiki.eveonline.com/en/wiki/Install EVE on Linux with Wine](https://wiki.eveonline.com/en/wiki/Install_EVE_on_Linux_with_Wine). You'll need to install some software in addition to WINE (upgrade to 1.5 or better - my default WINE installation wasn't compatible), and treat the instructions like a recipe for a challenging but delicious meringue. By that I mean don't start until you feel comfortable you can do every step. Notice I said "do" and not "understand." I'm all for a deep understanding of what's under the Ubuntu hood. But let's be honest, the goal is to blow some stuff up in a rocket-powered spaceship, not spend an evening looking up man files. Remember, I'm the New Guy, not some big-time Ubuntu guru who has any clue what he's doing. Make the goal something you want to do, and the understanding will come later as you continue to use Ubuntu every day.

If you run into any problems (I did - my window wasn't sizing properly and was cutting off about 1/5th of the screen), post your questions to either the Eve Online forums ([forums.eveonline.com](https://forums.eveonline.com)) or the Ubuntu Forums ([ubuntuforums.org](https://ubuntuforums.org)).

Once you get the game working, create your character and dive in! I make light of the learning curve, and the spreadsheets, but the truth is, if you follow the tutorial missions, you'll get a feel for the basics very quickly. What's more, you'll come away with some ISK of your own which you can spend to outfit your original ship, or the ships you receive as rewards for some of the missions. I can't stress this enough: DO THE TUTORIALS. I firmly believe they are the difference between flailing helplessly in space, and finding a career path that's fun.

What about all those maniacs trying to kill me? Yes, there are pirates in space, and yes, they are trying to kill you. But there are plenty of miners, explorers and traders who are more than willing to answer questions or point you in the right direction. Actually, even



the pirates are helpful. There are numerous stories out there of a newbie having his ship destroyed, only to find his attacker gave him some ISK and free skill books to show it's not personal. PvP (player versus player) is part of what makes Eve so fun. That simple run to the market to sell some minerals you just mined could be a walk in the park. Or it could be a laser light show that would make those midnight Pink Floyd shows at the planetarium jealous. There are ways to mitigate this, by sticking to hi-sec or never leaving your home station. But part of the challenge is realizing the gains you can achieve in "low-sec" outweigh the fear of pirates. White-knuckle flying, and just-in-time warps away from danger are the drugs of choice here. And they're highly addictive. So much so that the \$19 subscription, on a cost-per-hour-of-enjoyment basis, becomes a ridiculous bargain when you look up and realize you've been flying around for the past 4 hours.

One way to increase your likelihood of staying in Eve is to make friends right away. You can do this by chatting with the other pilots in your local space, or joining one of the hundreds of different

corporations. Some are mining collectives, others are pirate gangs, and still others are just-for-the-hell-of-it cooperatives among friends. Contrary to popular belief (even within the Eve community), it is possible to enjoy the game solo, only interacting with others as needed. But there are definite advantages to playing with others. Like fleet battles.

The Battle of B-R5RB started when one corporation failed to pay rent for the system they controlled. Smelling blood in the water, enemy corporations swiftly moved in. With the gauntlet thrown down, the battle was on, and within a few hours, thousands

of pilots were engaged in a massive battle that was streamed live by enthusiasts the way CNN covers a war zone. The biggest ship class in Eve is the Titan, a massive ship it takes months to build and train the skills required to fly it. Because everything in Eve has an ISK value, and because users can pay for game time (called PLEX) and exchange that for ISK, each Titan is worth thousands of dollars.

B-R5RB destroyed 75 Titans.

I jokingly showed you a spreadsheet earlier, now let me show you an actual screenshot from the battle.



In honor of those who "died," the game publisher erected a monument called Titanomachy at the site of the battle. Add sightseeing to the many things you can do in Eve.

I got into Ubuntu because of its fanatical user base, helpful community, and the exciting new worlds I could explore with it. The same can be said of why I got into Eve Online. It is no surprise to me that there's a huge overlap between the two groups.

Good luck to all you future capsuleers! May your ship be fast, your enemies few, and your rewards many!

And happy Ubuntuing!



**Copil** is an Aztec name that roughly translates to "you need my heart for what again?" His love of women's shoes is chronicled at [yaconfidential.blogspot.com](http://yaconfidential.blogspot.com). You can also watch him embarrass himself on Twitter (@copil).





At our local computer refurbishing project, the top sources of hardware failure that we see are power supplies, CMOS batteries, RAM, and hard drives. The first three failures can cause systems not to POST (Power On Self-Test) correctly. Hard drive failures are a bit more tricky. A really bad hard drive can cause a system to hang while displaying POST messages, or cause a system to randomly reboot (we see more of this on Windows systems), or slow a system down to a crawl, or it might not appear to do anything at all. Knowing a drive has issues before the drive fails can save a lot of work. Of course everyone should be backing up their data, but knowing your drive might have an issue in the near future is helpful. Linux has several tools for examining hard drive failures. This month we'll look at gsmartcontrol, a graphical version of the smartctl tool (from the smartmontools package).

Gsmartcontrol is a graphical version of the smartctl software. For new Linux users (like many of

our volunteers) it gives a simple, but comprehensive, look at a hard drive's health and capabilities as well as providing us with an easy method to do a short or long test on a hard drive.

Gsmartcontrol is not installed on most systems by default, so you'll have to install the gsmartcontrol package. Installing gsmartcontrol also installs the smartmontools package (which contains smartctl, the command-line test tool).

When you first run gsmartcontrol, all hard drives which gsmartcontrol can see are displayed. A hard drive does not have to be mounted for gsmartcontrol to see it and you can have several hard drives in a system. To examine a drive in gsmartcontrol, simply double click on it. When the drive opens up, it opens to an identity view tab that gives information about the hard drive. Besides listing the model of hard drive, the identity screen lists other useful tidbits of information such as the hard drive's serial

number (useful if you ever have to claim for insurance, or, in our case, report serial numbers to equipment donors), the firmware version of the hard drive (which could be useful when diagnosing problems on particular systems which might have issues with certain drives), the drive's capacity (size), the last time it was checked, as well as overall SMART health status.

There are several other tabs: Attributes, Capabilities, Error Log, Self-test logs, and Perform Tests, each of which are useful. When a drive has an issue, the text of some of the tabs might appear red (Attributes and Error Log in our example). This feature makes it easy to spot potential issues. The red text doesn't mean a drive has failed, but is a sign you might want to consider backing up sooner rather than later and look for another drive. Clicking on the red tabs reveals the potential point of failure.

In our example the Hitachi hard drive in my notebook has the

Device: /dev/sda Model: Hitachi HTS541680J9SA00	
Model Family	Hitachi Travelstar 5K160
Device Model	Hitachi HTS541680J9SA00
Serial Number	SB2204KGDVMJZE
Firmware Version	SB20C7BP
Capacity	80.03 GB [74.53 GiB, 80026361856 bytes]
Sector Size	512 bytes logical/physical
In Smartctl Database	Yes
ATA Version	7
ATA Standard	ATA/ATAPI-7 T13 1532D revision 1
Scanned on	Sun Feb 9 08:23:40 2014 EST
SMART Supported	Yes
SMART Enabled	Yes
Smartctl Version	5.41 2011-06-09 r3365
Overall Health Self-Assessment Test	PASSED



Reallocated Sector Count highlighted in pink on the Attributes tab, indicating that at some point the system has come across a bad sector, marked it and reallocated it elsewhere (meaning we won't have to worry about this sector anymore because it'll appear invisible to the OS). Red highlighting on any of the sections indicates a more serious error.

Wikipedia's entry on SMART (Self-Monitoring, Analysis and Reporting Technology) is handy because interpreting the Raw values of these Attributes can be tricky. For some attributes it's better to have a higher raw value while for others it's better to have a low raw value. You can find the Wikipedia SMART entry here: <http://en.wikipedia.org/wiki/S.M.A.R.T.>

According to Wikipedia we should hope for a lower than

Device: /dev/sda Model: Hitachi HTS541680J9SA00

Identity Attributes Capabilities Error Log Self-test Logs Perform Tests

SMART Attributes Data Structure revision number: 16

ID	Name	Failed	Norm-ed value	Worst	Threshold	Raw value	Type
1	Raw Read Error Rate	never	100	100	62	0	pre-fa
2	Throughput Performance	never	100	100	40	0	pre-fa
3	Spin-Up Time	never	253	100	33	0	pre-fa
4	Start / Stop Count	never	98	98	0	3790	old age
5	Reallocated Sector Count	never	100	100	5	166 (0, 20)	pre-fa
7	Seek Error Rate	never	100	100	67	0	pre-fa
8	Seek Time Performance	never	100	100	40	0	pre-fa
9	Power-On Time	never	64	64	0	15870	old age
10	Spin-Up Retry Count	never	100	100	60	0	pre-fa
12	Power Cycle Count	never	99	99	0	2549	old age
191	G-Sense Error Rate	never	100	88	0	0	old age
192	Head Retract Cycle Count	never	100	100	0	14024779	old age
193	Load / Unload Cycle	never	95	95	0	50186	old age
194	Temperature (Celsius)	never	183	100	0	30 (0 52 255 253)	old age
196	Reallocation Event Count	never	100	100	0	19	old age
197	Current Pending Sector Count	never	100	100	0	0	old age

Norm-ed value (100) in the Raw value section (166). We're higher, which indicates failure. The higher the value, the more sectors the hard drive has reallocated.

Similar, but more problematic are the Current Pending Sector Count and Uncorrectable Sector Count – both of which indicate failures where the sectors haven't

been rewritten somewhere else. It's these kinds of errors that can cause a system to seemingly randomly reboot (or blue/black screen) when the OS comes across the sector.

The Capabilities tab of gsmartcontrol shows the SMART capabilities of the hard drive. For brevity we won't go into this tab

since it doesn't indicate errors and is less useful preventing drive errors.

The Error Log tab (below left) shows up to the last 5 errors. The details section of the Error Log tab is interesting because it shows the exact address where an error occurs. The Lifetime hours section is also interesting because it shows approximately when the error occurred, in this case at the 12756th hour (531.5 days, under 2 years). The Self-test Logs tab (below right) displays information from smart tests performed on the drive. The BIOS of some systems (HP for example) have a self-test that might show up in the Self-test Logs, as well as any tests performed on the Perform Tests tab of gsmartcontrol. Again, the Lifetime hours is important because it shows the last hour a self-test was performed (15020th hour in our example - 625 days).

Device Information - /dev/sda: Hitachi HTS541680J9SA00 - GSmartControl (as superuser)

Device: /dev/sda Model: Hitachi HTS541680J9SA00

Identity Attributes Capabilities Error Log Self-test Logs Perform Tests

SMART Error Log Version: 1  
ATA Error Count: 1 (Note: Usually only the last five errors are stored.)

Error #	Lifetime hours	State	Type	Details
1	12756	active or idle	Identity not found	at LBA = 0x02c039ca = 46152138

Device Information - /dev/sda: Hitachi HTS541680J9SA00 - GSmartControl (as superuser)

Device: /dev/sda Model: Hitachi HTS541680J9SA00

Identity Attributes Capabilities Error Log Self-test Logs Perform Tests

SMART Self-test log structure revision number: 1  
Number of entries in self-test log: 5

Test #	Type	Status	% Completed	Lifetime hours	LBA of t
1	Short offline	Completed without error	100%	15020	-
2	Short offline	Completed without error	100%	3	-

Recalling that the error on our drive was at the 531 day mark we've gone almost 100 days since the error was found by smart.

To run a self-test on your drive, open the Perform Tests tab, choose either the Short Self-test or the Extended Self-test then click the Execute button. Short Self-tests typically take between 1 to 2 minutes while the Extended Self-test can take 30 minutes or more. At the computer recycling project, we test each drive first using the Short Self-test; if the drive fails, or we suspect a drive might be failing

despite passing the short test (the sound of the drive for example), we then run the Extended Self-test. Before finding gsmartcontrol we used to run the manufacturer test for each drive. Running manufacturer's tests is ultimately the best way to test a drive, but there are a few problems with using a manufacturer's tool:

- Most manufacturer's tools require you boot from software, meaning you have to reboot your computer to their tool - not good if you don't want downtime.
- Tools get upgraded by the manufacturer and don't always

work on their older drives (or newer drives in the case of old versions of the software).

- One manufacturer's tool often won't work on a drive by another manufacturer, so if you have a mix of drives you have to get each manufacturer's tool.

Gsmartcontrol (and smartctl) works on a large number of drives from a wide range of manufacturers; it's Free Libre Open Source Software, and has an extensive but understandable user interface.

The command-line tool, smartctl, is also installed when you install gsmartcontrol (smartctl is in the smartmontools package). Both tools need to be run with root/administrative privileges. Smartctl can display all the information gsmartcontrol displays, but doesn't need a graphical user interface to do so. And, like gsmartcontrol, smartctl doesn't require taking your system down. We won't cover smartctl this month, but it's worth mentioning since it's handy for monitoring drives over a SSH connection and because you can run it in a cron/anacron job.

```
charm@wildthing:~$ sudo smartctl --all /dev/sda
smartctl 5.41 2011-06-09 r3365 [i686-linux-3.2.0-4-686-pae] (local build)
Copyright (C) 2002-11 by Bruce Allen, http://smartmontools.sourceforge.net
```

```
=== START OF INFORMATION SECTION ===
Model Family:      Hitachi Travelstar 5K160
Device Model:      Hitachi HTS541680J9SA00
Serial Number:     SB2204KGDVMJZE
Firmware Version:  SB20C7BP
User Capacity:     80,026,361,856 bytes [80.0 GB]
Sector Size:       512 bytes logical/physical
Device is:         In smartctl database [for details use: -P show]
ATA Version is:    7
ATA Standard is:   ATA/ATAPI-7 T13 1532D revision 1
Local Time is:     Sun Feb  9 11:12:21 2014 EST
SMART support is:  Available - device has SMART capability.
SMART support is:  Enabled
```

```
=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED
```



**Charles McColm** is the author of *Instant XBMC*, and the project manager of a not-for-profit computer reuse project. When not building PCs, removing malware, encouraging people to use Linux, and hosting local Ubuntu hours, Charles blogs at <http://www.charlesmccolm.com/>.





The reason for this review is because I quite often see questions on the Ubuntu Forums about what Antivirus programs to use and the standard answer is: you don't need an Antivirus in Ubuntu/Linux.

And though this is generally true, some people feel uneasy without any Antivirus protection and just want peace of mind.

Plus, there are legitimate reasons to have an Antivirus program on a GNU/Linux machine; you may share files with other users who are running Windows, or you might be running a mail server and don't want viruses spreading through your network.

I have also found it useful when I am working on someone's computer that needs a complete format and reinstall of Windows.

Now, I can scan all of their files for Malware (that I have backed up to a USB Drive) right from my Ubuntu machine – before I transfer the files back to the Windows computer.

There are also things that Linux users still might need protection from, such as Boot Sector Viruses, Browser Flash & Java Exploits, and though they are few and none (known) in the Wild, there are GNU/Linux Viruses out there as well.

I have been using Ubuntu for a little over a year now with only ClamTk installed, which I use to scan files that I am sharing with others. I decided to install ESET NOD32 Antivirus about two weeks ago just to check it out, and when I did the first full virus scan, it found three items in Chrome's temporary files.

Reason	Count
Win32/InstalleRex.M potentially unwanted application	1
HTML/Iframe.B.Gen virus	1
Win32/AdWare.1ClickDownload.AQ application	1

Two of them were labeled Win32, and would probably have no effect on a GNU/Linux system; the third was the HTML/Iframe.B.Gen which redirects the browser to a specific URL location with malicious software:

[http://www.virusradar.com/HTML\\_Iframe.B.Gen/description](http://www.virusradar.com/HTML_Iframe.B.Gen/description)

## PROS:

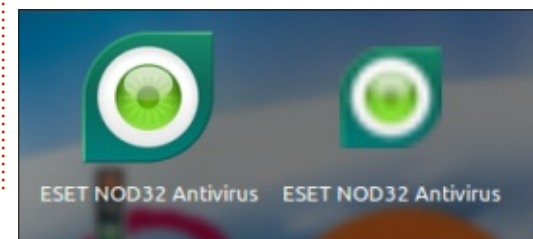
1. ESET is well established with a great reputation and with consistently high scores at AV-Comparatives.org, virusbtn.com and AV-TEST.org.
2. It detects GNU/Linux, Windows and Mac OS Malware. Most of the Linux Antivirus programs detect only Windows Malware.
3. It is super easy to install and has a nice user interface with plenty of options such as Real-Time Protection, which can be disabled for users who have computers with limited resources, or who use only want on-demand Virus scanning.
4. It uses very few resources and I

have not noticed any slowdown of my Laptop using a Dual-core Intel P6100 CPU with 4 GB of RAM. Even during a Full System Virus scan, the CPU and RAM usages were reasonable. Users with a Single-core CPU or with 1 GB or less of RAM may want or need to disable the Real-Time Protection.

5. Peace of Mind. I like the idea that it is protecting me from GNU/Linux Malware as well as preventing me from potentially spreading Windows Malware to others.

## CONS:

1. The icon that is displayed in the Ubuntu Launcher is very low resolution and it would look much nicer if it was replaced with a better quality icon.
2. Also NOD32 is shown twice in the installed program list – one low



resolution icon and one very nice looking icon – but nothing happens when you click on either of them. It should at least open the program when clicking on it.

3. There is a notification whenever there is a Virus Definition Update. But it can easily be disabled by going into the application preferences and selecting “Do not display notification about successful update” checkbox.

ESET NOD32 Antivirus for GNU/Linux is neither Open Source nor Free, but it can be found at a very reasonable price on NewEgg or Amazon. I have seen ESET NOD32 Antivirus 1 PC License for around \$10.00 and a 3 PC License for less than \$20.00. I purchased ESET NOD32 Antivirus (3 PCs) from NewEgg for \$18.00; the box that I

received only had the Windows version, but all you have to do is Download the Linux version and use the same license.

ESET uses what they call Unilicense so you can purchase any ESET product and install it on GNU/Linux, Windows or MAC OS X, and use the same license on however many systems it is good for. From what I have read, if you purchase a license for ESET Smart Security, you may use that license to download/install ESET NOD32 Antivirus. Purchasing a license for ESET NOD32 Antivirus does not allow you to download/install ESET Smart Security however:

<http://www.eset.com/int/home/unilicense/#tab-383876=2>

<http://www.eset.com/me/home/unilicense/#tab-379022=0>

So you can use the license from a higher-end product on a lower-end product, but not from a lower-end product on a higher end product.

Hopefully there are plans for improving the program or adding a Cyber Security/Smart Security version with more features.

Version 4 of ESET NOD32 Antivirus for GNU/Linux has been out for quite some time now; the Mac version is at 5 with a new version in Beta Testing and the Windows version is up to 7.

When they release a new version they should also add the Gamer Mode. With the release of Steam for GNU/Linux and the SteamOS which is GNU/Linux based, it might be a good idea for them to add such a feature.

### ESET NOD32:

<http://www.eset.com/us/home/products/nod32-for-linux/>



## Full Circle Podcast Episode 38, Just The Two Of Us

Your hosts:

- Les Pounder
- Tony Hughes
- Jon Chamberlain
- Oliver Clark
- and Freaky Clown



from the  
Blackpool (UK) LUG  
<http://blackpool.lug.org.uk>

In this Episode we announce the new format for the shows, talk about our hardware, review, issue 76 of the magazine and we have an interview from the STEM York Raspberry Jam.

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# WHAT IS

Written by Cuiv

## Cryptocurrency Part 1

**A** CryptoCurrency is actually simply a ledger/audit of transactions, maintained by a decentralized peer to peer network. Amazingly, this ledger is protected by the computing power of the peer-to-peer network, and, unless an entity with malicious intentions gained control over more than 50% of the total network computing power, the ledger is safe and sound.

The ledger simply contains transactions (here expressed in BTC/bitcoin):

- Alice gave Bob 5 BTC
- Bob gave Steve 1.5 BTC
- Steve gave Frank 0.8 BTC

All transactions are sent to the whole peer-to-peer network: in other words, all transactions are public, and therefore anyone who knows how to add can find out which accounts have received the most money. However, it is difficult to map any given account to a given entity, as any entity can have many accounts.

It is actually difficult to express

what a single coin of a cryptocurrency is, because coins exist only as parts of transactions and have no real being of their own. In cryptocurrencies, the only elements that have being are transactions and transaction blocks (more on this later). Coins themselves are not modeled as part of the protocol.

This can lead to the question: how are coins created? There is a system in place (mining) that allows transactions to give coins to a recipient, without having any specific sender - thus coins are "created" from nothing through transactions. This will be explained as part of the block mining paragraph.

### MAKING SURE A PERSON HAS ENOUGH COINS TO COVER A TRANSACTION

Assume Alice wants to send Bob some coins. How are we sure that Alice has enough Bitcoins or other cryptocurrencies to send to Bob?

To be sure that Alice has enough Bitcoins to send to Bob is easy: with each outgoing transaction, she needs to broadcast incoming transactions to show that she has enough money to send that money to Bob. So she will actually refer to transactions as below:

- "I received 3 bitcoins on my wallet from Peter"
- "I received 2 bitcoins on my wallet from Frodo"

Therefore: "I can send 5 bitcoins to Bob's wallet"

Once this is done, the referred transactions (also known as the inputs of a transaction) will be considered to have been flagged as "Spent", meaning she can no longer use them as referrals to send money, avoiding double-spending money (otherwise, Alice could keep referring to the 3 bitcoins she received from Peter and spend again and again from that transaction). In reality, none of the transactions are flagged as spent; it is simply easy to check all the transactions in the peer-to-peer-maintained transaction ledger to detect whether any transaction has

been or is being double-spent (actually there is an index of unspent transactions to make that task easy).

In effect, given a long list of transactions, it is computationally very difficult (and in many cases impossible) to find a set of previous transactions that show Alice received money for exactly the amount that she wants to send. This problem is well-known in mathematics, and commonly referred to as the knapsack problem.

To solve this issue, with each outgoing transaction, Alice will simply refer to ALL of her previous incoming transactions (which will be flagged as spent), and two transactions will be generated:

- one that goes to Bob, for 5 BTC
- one that goes back to Alice, for her remaining Balance

In other words, with this outgoing transaction, Alice flags all of her previous incoming transactions as spent, and replaces them by a single transaction that



# WHAT IS

summarizes her remaining balance.

This solves the issue of knowing whether Alice has enough to cover the outgoing transaction.

An example is as below:

- Alice received 7 bitcoins from Peter (Transaction1)
- Alice received 10 bitcoins from Jason (Transaction2)
- Alice received 6 bitcoins from Steven (Transaction 3)
- Alice wants to send 15 bitcoins to Bob (Transaction4)

So what will happen is:

- Alice creates Transaction4, referring to Transaction 1, 2, and 3 as inputs, and broadcasts it to the network
- Transactions 1,2,3 are therefore spent, and cannot be used as referral transactions to send money anymore
- A new transaction, Transaction5, is created that gives back 8 bitcoins to Alice. That transaction is still valid, and can be used by Alice to send bitcoins later on.

## MAKING SURE THAT ALICE IS THE TRUE ORIGINATOR OF THE SEND REQUEST

One of the problems faced by cryptocurrencies was: when looking at the transaction “Alice gave Bob 5 BTC,” how are we sure that it is really Alice who sent Bob 5 BTC? Could it be that Bob sent a fake message to the peer-to-peer network saying there was such a transaction, in order to steal 5 BTC from Alice? Or might Alice be referring to other transactions that were not sent to her?

Proving that Alice is indeed the owner of the money is accomplished by signing the message using a public and private key system.

Basically, when receiving money from Peter and Frodo, Alice gave each sender a public key (her receiving public key, effectively an address that identifies an account), which is a 64-digit hexadecimal number. When she generated that public key, she also generated a private key, that she alone knows - it is critical to protect that private key.

For each incoming transaction (input) that Alice refers to when she wants to send money, Alice needs to prove that she is the

owner of the Public key that this incoming transaction was sent to. To do so, she mathematically combines her transaction message “Alice sends 5 BTC to Bob” to the private key (linked to her incoming account public key) to generate a signature that is appended to her transaction message. This signature does not contain her private key, nor can her private key be inferred from it. However, it is possible to verify that a message was properly signed by the relevant private key by comparing the public key to that signature and the message.

Therefore, all nodes on the peer-to-peer network can do the following for each transaction sent:

- check the referral transactions that prove the sender has enough coins to send (i.e. that previous transactions that the sender received are enough to cover the amount being sent);
- get the public key (or public keys) that the referral transactions were sent to (this should be the sender’s receiving public key);
- check the signature of the send transaction against each public key and the send transaction message content;
- if the signature matches the

public key, then it means that indeed the sender is the owner of the private key linked to the public key that the referral transactions were sent to. The sender is therefore entitled to send that money, and mark the referral transactions as spent.

This ingenious system makes it easy for anybody to check whether a sender owns the private key to a public key to which money was sent, and therefore to check that the sender indeed was the recipient of enough money to be able to send money. All of this without knowing the sender’s private key!

What is also interesting is that, each message being different, the signature generated by mixing the private key to that message is also always different, even though the private key itself doesn’t change. Therefore the signature not only serves to prove that the sender is the owner of a receiving account that has received enough money to cover the transaction, but also to protect the message against tampering: if anyone were to change the contents of the message (such as the public key to which the message is being sent to



# WHAT IS

in order to receive it maliciously), the signature would not match the message it is attached to anymore, and the transaction would be rejected.

Generating new public keys and private keys is easy, and can be done without access to the Internet - it is almost impossible to have a collision with another user, because of the sheer number of possible public keys. Cryptocurrency clients will usually do it for you.

**Terminology point:** referral transactions are usually referred to as the “input” to a transaction, and the “output” of the transaction is the public key and account to which money is being sent.

## CHECKING THE INPUT TRANSACTIONS

Of course, all of the referral transactions need to be checked as well! This is achieved by looking at their inputs (their own referral transactions) and then checking those, all the way back to the beginning.

When downloading a

cryptocurrency client (such as a Bitcoin client), the first thing the client does is actually download the whole history of transactions from nodes on the network, and validate each and every one of the transactions and their inputs, and it keeps doing so for any new transactions received from the network. It also makes sure that no transaction has been referred to as input more than once, since that would indicate there was a double-spend.

Thus a peer-to-peer security network, requiring no trust between nodes, is formed.

## QUICK SUMMARY OF WHAT WE HAVE SEEN THUS FAR

A cryptocurrency is just a list of transactions, which are protected against tampering and negative balances through a public/private key system.

In effect, any public key used on the network is an account, also referred to as a wallet. The only thing necessary to claim ownership of that Public key (and therefore to claim ownership of all the transactions that were sent to that

public key) is the Private key linked to that Public key. That Private key gives the power to send money to another Public key address. In other words, a cryptocurrency account is a simple tuple of (public key, private key), which can be printed on paper. If you have that tuple, you own the account. All the records are kept in the peer-to-peer network, and it is therefore not necessary to keep track of anything other than your own public and private key tuples.

You can at any time know how much coin each of your public keys is entitled to spend by getting the most recent ledger from the peer-to-peer network, and adding up all unspent transactions that were sent to each public key until you get your balance.

All cryptocurrency transactions are irreversible. There is no customer support, no central entity to refund you. Transactions cannot be rolled back because they are already part of the public record across many nodes.

### Main sources:

- the bitcoin paper: <http://bitcoin.org/bitcoin.pdf>
- the excellent, but fast-moving,

under-the-hood explanation of bitcoin (this explanation follows roughly the same structure, but spends more time on some points and less on others): <http://www.imponderablethings.com/2013/07/how-bitcoin-works-under-hood.html>

- the Primecoin paper: <http://primecoin.org/static/primecoin-paper.pdf>
- an explanation of the paper: [http://www.reddit.com/r/primecoin/comments/1rp5vx/could\\_someone\\_explain\\_in\\_detail\\_the\\_algorithm/](http://www.reddit.com/r/primecoin/comments/1rp5vx/could_someone_explain_in_detail_the_algorithm/)

## COMPETITION



Win 500 Dogecoin (DOGE) by answering the following question: Referral transactions are usually referred to as \_\_\_\_\_? (Hint: the answer is in the article)

Email your answer to: [ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org) before Friday 21st March. The winner will be notified via email for a valid Dogecoin wallet address.

Another 500 DOGE will be up for grabs next month in Cryptocurrency Part 2.



# LETTERS

If you would like to submit a letter for publication, compliment or complaint, please email it to: [letters@fullcirclemagazine.org](mailto:letters@fullcirclemagazine.org). PLEASE NOTE: some letters may be edited for space.

## MORE WINE!

I love the magazine and I read it frequently. I especially love the compilation editions where significant series are pulled together in one. Python has been exceptional in this regard. I find the topic aspect helpful to include with distributions to friends, as it helps provide them with nice introductions to some of the key applications on Linux -- Drawing, Office, Programming, Unity, Virtualization, etc.

On that note, I'd like to see a compilation for the GIMP articles. That was also an exceptional series.

As for topics, I'd really like to see a series/tutorial on Wine. Wine usually just works, but understanding what the limitations are, how it works, what wine bottles are, etc, requires more digging around. Wine has come a long ways forward, and I find it essential for some "gaps" in my linux machines capability -- most significantly Acrobat Professional.

Again, thank you for the dedication and efforts to support the community. You, and your contributors' efforts are as essential as the programmers.

**Arick**

## TOUCHY

I wanted to ask you if Ubuntu was ever going to support "Touch", or does it already? With Windows 8.1 out, everything is going to a "touch" format, except the monitors. One would think that a new monitor now would be a touchscreen. But, no. So why would I want Windows 8?

I'm finding second-hand computers for about \$10.00-15.00 and am restoring them, maxing out the memory and upgrading them wherever I can (video card, hard drives, etc.) Anyway, I found a case at a thrift store for \$10.00, and it had a brand new motherboard in it. The guy said the motherboard was bad, but I was really after the case. Anyway, got it home and opened it

up. Inside was a brand new Asus M4-A785-M Motherboard with an AMD Dual Core Processor. All it needed was the P/S and some memory which I got from Ebay. All for less than \$40.00! Put it all together and booted it up. Kind of stalled on me, like there was a short. Started to disconnect all the peripherals and the board booted just fine. Came to discover it was the IR connector (the wires were reversed), got that fixed, and plugged everything back in. The system booted with no problem and I installed XP as the OS with Ubuntu as the backup. I looked up the retail price of the MB and discovered it was between \$50.00 and \$100 new. Not including the processor, and I got it for \$10.00! Made my day. Total cost to build: about \$50.00. Price to build new: probably over \$500.00. My main system that I made 3 years ago cost me about \$1,100.00. But then I had to buy new hard drives, Windows 7 (64bit) and MS-Office 2010.

I really liked the article about the computer rescuers putting

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## FULL CIRCLE NEEDS You!



Without reader input **Full Circle** would be an empty PDF file (which I don't think many people would find particularly interesting). We are always looking for articles, reviews, anything! Even small things like letters and desktop screens help fill the magazine.

See the article **Writing for Full Circle** in this issue to read our basic guidelines.

Have a look at the last page of any issue to get the details of where to send your contributions.





Ubuntu on the rebuilt machines. Way to go! Then the buyers have a choice, keep Ubuntu, or go to Windows. That's the option I tell people when I put computers back together.

**John Stancliff**

## ARTICLE IDEAS

I have a couple of thoughts.

1. How about a story comparing the strengths and weaknesses of other Linux distributions compared to Ubuntu. I have Oracle's Virtualbox -- initially because I needed Windows 7 to run a work-related app -- and I have installed various Linux distros to compare my experience with what I have now -- Ubuntu with a Cinnamon UI -- with other Linux distros ranging from Fedora (horrific install experience) to Bodhi (I still have this on virtualbox because I like Enlightenment and Bodhi is quick). I think such an article -- starting with how it installs, how difficult it is to set up, get updates, etc, would really benefit new users. I keep extolling the virtues of Linux, and I

always recommend Ubuntu, but even Ubuntu with certain interfaces would help ease the transition from Windows. Perhaps Linux distros that emulate Windows XP more or less.

2. I would love a story -- any story, progress report, etc -- that can inform Ubuntu users (or any Linux user for that matter) regarding the progress of getting Linux (and I am NOT talking about Android or ChromeOS) on a tablet. Or, for that matter, an easy method for getting Linux on my Sony S Tablet, or a Kindle, Nook, and, possibly, an Apple iPad. What is going on regarding the delay. A story outlining the difficulties, challenges, etc, would be of interest especially to those developers who may read your newsletter. Why not be the person(s) who can create the way to easily accomplish this task. I would do it now -- getting rid of my Android OS -- and installing Ubuntu in a heartbeat. Perhaps, a comparison of Android, Chrome, and more orthodox Linux OSs would be in order.

I enjoy FCM. However, I do think that you need to focus more on some "paradigm" issues

(marketing, development -- viability of an OS that works across devices, e.g., distribution -- how come a company like System76 cannot produce a Linux tablet, for example?

**John Moore**

Ronnie says: *If anyone would like to grab any of those ideas, feel free. Regarding FCM focusing on marketing, development, etc; as I keep saying, we can print only what people send in.*

## BACK IN TIME

The distro specific files [for Back In Time] apparently aren't available for Mint XFCE - common files yes but no GUI. XFCE is my current experiment on the main machine. I've been using it since Mint XFCE went final. I think its a bit more versatile than SolydX being, after all, a Mint distro. I'll let you know if I find any issues on the Toshiba netbook; so far I've only installed it.

For what it's worth, my take on back-up is: user data only. If the user has lost something, as you did,

that's all that is important anyway. The config and application stuff will be regenerated if the OS needs to be reinstalled. The new installation might suffer heartburn if the old stuff was restored so it shouldn't be done. Mint Back-up's saving and restoration of the user apps might make sense. The back-up app should backup only the changed information, should allow the creation of a folder to contain the backup rather than scattering stuff all over the backup drive, should allow backing up to USB stick (Lucky apparently can't find one) and should have a straightforward, user friendly and understandable GUI (I can't find one that does!).

**Dave Rowell**



# Tuxidermy

FACT:

EVERYONE HAS NIGHTMARES, NOW AND THEN.

SOMEBODY HELP  
ME!!! THEY'RE  
EVERYWHERE!!!

BUT HE'LL SOON REALIZE HE'S NOT DREAMING.





## Q&A

Compiled by Gord Campbell

If you have a Linux question, email it to: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org), and Gord will answer them in a future issue. Please include as much information as you can about your query.

**Q** Can I attach two monitors to my Dell Vostro 220?

**A** No, it has only one video connector.

The way around this is to buy a video card which supports two monitors. The computer is old but it has a PCIe x16 slot, so there are lots of video cards available.

After installing the card, you then install an "additional driver," and, if it's an Nvidia card, in "Nvidia X Server Settings" you can set it up the way you want, as necessary. Most likely, when you plug in the two monitors, it will do what you want.

**Q** I installed Ubuntu 13.10. The other OS was Windows XP. Everything worked OK. Then upgraded to Windows 7 and have lost grub boot loader.

**A** Use Boot Repair: <https://help.ubuntu.com/community/Boot-Repair>

**Q** What is better, a hardware firewall or a software firewall?

**A** (Thanks to **The Fu** in the Ubuntu Forums) There really aren't any "hardware firewalls" anymore. Most cheapo routers run Linux and use iptables as the firewall. pfSense is a better firewall than any of the Linux options. It is smarter about tracking connections, and because it is based on BSD, it tends to slow down, not fail, under heavy loads.

Gord adds: modem ==> pfsense ==> local network works really well for me.

**Q** I have an Ubuntu server and configured NFS server, but it is not possible to access from any machine in the same network.

**A** (Thanks to **SeijiSensei** in the Ubuntu Forums) Have an iptables firewall on the server? If so, you probably don't have port 2049 open.

**Q** I have a laptop with lubuntu 13.10 with these specifications: 512 RAM, gma900, Intel Centrino 1.6 GHz. Can I use a virtual machine to run XP?

**A** No, you need more memory.

### TOP NEW QUESTIONS AT ASKUBUNTU

\* If I reinstall mysql do I lose my databases?

<http://goo.gl/BikI22>

\* How can I configure apt-get to clean automatically after every install

<http://goo.gl/YimCs2>

\* Command to know my external IP address?

<http://goo.gl/hmHQLA>

\* What can I do with an old, low spec computer?

<http://goo.gl/epRFm1>

\* How do I find the package name

for an application that I want to uninstall?

<http://goo.gl/7VcujW>

\* List all MAC addresses in my local network

<http://goo.gl/wzZcSi>

\* Can `cat` show files using code markup in colors?

<http://goo.gl/k8beyx>

\* Partition table gone and bad MBR, trying to recover through TestDisk

<http://goo.gl/F0xr5V>

\* What's the lightest Ubuntu desktop environment?

<http://goo.gl/lG6zmZ>

\* Is there a better option other than NTFS for a shared HD between Ubuntu and Windows 7?

<http://goo.gl/Hjcw1J>

### TIPS AND TECHNIQUES



#### Solution Options







I recently ran into the weirdest problem. It appeared that my hard drive was packing it in, and eventually, I could not boot Linux Mint 13, my daily driver.

I moved the SATA cable to the other hard drive on my primary system -- and Small Business Server (SBS) failed to boot. Huh?

It appeared that the SATA port or the cable had failed, so I plugged in a different cable in a different port, and SBS booted; presto-chango, Mint booted.

I have the luxury of being able to easily try these options, so I solved my problem fairly easily. Most people would have just

assumed that the hard drive failed, and would have resorted to whatever the state of their backup was. In many, many cases, that state is dreadful.

So I can reiterate Ronnie's recent message: make a good backup. Backup to DVD, backup to an external drive and backup to the Cloud. But back up!



After a long career in the computer industry, including a stint as editor of Computing Canada and Computer Dealer News, **Gord** is now more-or-less retired.

## PYTHON SPECIAL EDITIONS:



<http://fullcirclemagazine.org/issue-py01/>



<http://fullcirclemagazine.org/issue-py02/>



<http://fullcirclemagazine.org/python-special-edition-issue-three/>



<http://fullcirclemagazine.org/python-special-edition-volume-four/>



<http://fullcirclemagazine.org/python-special-edition-volume-five/>



<http://fullcirclemagazine.org/python-special-edition-volume-six/>



From **Michael Lewis**: What issues do we have when finding open WIFI in our neighborhoods and in using them? Using a directional antenna the connections are good, fast and usually reliable, but the sources are unknown. What protection would be recommended for everyday use of WIFI, especially for those of us who may pay a bill or order from Ebay using these free sources?

MB: The main risk with WiFi is transmitting data through the air and then putting it onto someone else's network. These areas – which you can't control yourself – have a higher risk of interception by others. To some extent you can minimize the risks by using HTTPS; it's supported by most sites where sensitive data is transmitted. If you use free sources, be aware of possible snooping by others, and encrypt as much as possible (web browsing, e-mail, IM).

From **John Daniels**: How would I go about sending the logs from all workstations and servers to a GNU/Linux box for analysis? What

is the best tool to collate the logs from various OSes and formats?

MB: To correlate and analyze log files, it is preferred to have them stored in a similar way. GNU/Linux systems use syslog for that. While, normally, data is stored only locally in /var/log, most syslog daemons can be adjusted to send their data to a (central) remote syslog host. For Windows based systems, there are other solutions; there are also tools which support syslog and send the data in the same way as GNU/Linux machines. After collecting, there are different tools available to work with the data, from log parsing to more advanced event correlation.

From **Sky Aisling**: What are your thoughts on UEFI?

MB: As with all standards, they usually take some time to be properly implemented. At this moment, I see many people with a lot of boot issues when setting up dual boot (with GNU/Linux). The idea behind UEFI however is great.

If you want to protect a system, all layers have to be protected. UEFI tries to be the glue to avoid malicious code sneaking into the boot process. It's also this area which is the most important one to watch, because once malware is in, it can start spreading (into memory, OS, etc).

From **Pieter Cloete**: How safe are my Ubuntu systems from virus attacks, and what is the best software to stop them – if needed.

MB: Normal viruses – like we have seen in the period of MS-DOS – are nowadays not much of a risk. Worms, trojan horses and malicious scripts are still a serious threat to every operating system. Gladly, there aren't many worms which attack Linux systems. Diversity of Linux systems might be one reason why malicious code might work on Red Hat, but not on Ubuntu, for example. My advice for making sure a system stays secure is to stay up-to-date with software patches. Perform testing of unknown scripts or new software

in a dedicated virtual machine, and audit your system. In all cases, your system is as secure as the weakest link. My tool, Lynis, might help to uncover these areas and provide tips for additional software to keep systems secure. For malware, in particular, you could use tools like ClamAV, Rootkit Hunter, Chkrootkit, OSSEC and LMD.



**Michael Boelen** is the author and project lead of *Lynis*. His company *CISOfy* provides security guidance to individuals and companies by sharing open source software, support and knowledge. He loves sport, reading, and enjoying life with friends.







What's all the fuss about with the "BIT.TRIP...." video game series? Let's find out. "BIT.TRIP PRESENTS... Runner2: Future Legend of Rhythm Alien" is one of seven games from the "Bit.Trip" game series by developer Gaijin Games. It was originally released as a downloadable game on the Nintendo eShop for the Wii U, and through "Steam" for Microsoft Windows, OS X, and GNU/Linux on February 26, 2013. The next day it was released for the Xbox 360 and in March on the PlayStation Network. Later in the year it was also released for iOS and PS Vita.

"Bit.Trip Presents... Runner2: Future of Rhythm Alien" is a rhythm side-scrolling platform video game which can be played best if you have fast reflexes. I installed the game on my PC through "Steam" in less than 5 minutes, including downloading time. Currently, the game costs \$14.99 on "Steam."

After installing the game and starting it for the first time, I noticed the colorful cartoon-like

graphics, driving dance beats and funny narration. As I was enjoying the first opening screens, I was told by one of the game's screens that the game is best with a game controller. Unfortunately, this is where I encountered my first hurdle; my Razer Onza game controller didn't work, nor did my MadCatz controller. Normally I wouldn't care if the game controller didn't work, however, I was sort of committed to making one of my game controllers work, since the game itself suggested one. I searched in various forums, especially on the Steam

Community Forum, found that I wasn't alone. Apparently, many other GNU/Linux gamers have failed to get their game controllers to work with Bit.Trip. Oh well, I decided to play the game with my keyboard and mouse... no big deal.

I began playing the game and discovered that I had to have fast reflexes if I wanted to make any sort of progress. It didn't take me long to adjust my playing style and before too long I was moving my way up the levels. The object of the game, like most platform games, is to safely make it to the finish line

without dying. The screen moves quickly from left to right, and your character goes along with it. At first, you have only one character to choose from, but as levels are unlocked, others become available. When you move, or rather, while you run to the right, you must jump over the bad guys or any obstacles that appear before you. If you don't jump over them, you die. You also must jump over any holes on the ground below you. Eventually, you are told about other actions as they become available to you. For example, you are expected to duck when necessary and later you can perform other movements as well.

While playing the game, I noticed that the obstacles I encountered were supposed to be conquered rhythmically. In other words, the soundtrack plays in the background and as different obstacles come up, your precisely timed movements make certain sounds that eventually create a pleasing symphony as you reach the finish line. Thus, the soundtrack plays a very important role in the game.





Unfortunately, I ran into many problems with "Runner2." At first, the game would freeze at random times. There was nothing I could do with the game frozen except for Ctrl+Alt+F5 (or Fn) and then reboot my system. Even trying to kill the process was to no avail, which left me with no choice but to reboot. Then I'd go back to playing and everything would be fine for a while until again the game would freeze at some other random moment. I went searching for answers and ended up with more questions than answers. On the Steam Community Forums I found myself floating in an ocean of open threads. The forums are flooded with threads about "Bit.Trip.Runner2," randomly freezing, crashing and/or failing to launch. If it were just me having these problems, I would keep looking for a fix for my problem. You bet I searched for a way to fix it, I just couldn't find any answers. My PC well exceeds the minimum system requirements as well as the recommended system requirements for this game. In fact, my PC meets the requirements for other games that demand much, much more than "Runner2", and I haven't had these problems with

them. Thus, it is my conclusion that, until a fix, patch or workaround is offered, the game is almost unplayable. You may gamble if you like and you might just get lucky in getting the game to run smoothly on your PC, but, unfortunately for myself and many others, nothing has helped thus far. I will periodically keep trying to see if the game becomes playable again. If and when the game begins to run smoothly on Ubuntu, I will gladly inform the readers of FCM and change my current low rating of it.

"Bit.Trip Presents....Runner2" is a great and fun game to play, but it is simply a headache trying to get

through the game without running into problems. I have a feeling it may be a dependency issue, and I know it's not on my end, but rather on the developers. For now, I have to give the game a 2½ rating due to its poor playability on GNU/Linux. Until the developers issue a fix, the higher rating I'd like to give "Runner2" will have to wait.

## MY GAMING SETUP

I played "Bit.Trip Presents....Runner2" with my custom made desktop PC consisting of an AMD FX-6100 3.3GHz CPU, an Asus M5A97-EVO motherboard, a Sapphire Radeon HD 5770 graphics

card, 8GB of Kingston Hyper X RAM, and a 1TB Seagate Barracuda hard drive. The software used was Ubuntu 12.04.1 LTS with Unity and AMD 13.1 proprietary graphic drivers.



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**S**erious Sam 3 BFE can be described as mindless fun, and can also act as a challenge to those who are not veteran FPS game players. If you were a fan of the doom series, then you will find it a welcoming addition to your game collection – it feels and plays like the retro games such as Doom or Duke Nukem (not Duke Nukem Forever; we don't talk about that), but it tries to add elements to keep the series up to date.

You play as Sam Stone, and he has made a name for himself within the games industry by battling hordes of enemies and laying waste to them with big guns and snarky one liners. He makes a return in 2011 where, using the same formula as before, he brings a breath of fresh air to the tiresome FPS that is pushed out in today's industry (yes, I'm looking at you Call of Duty). Yes, you can say it is outdated and comes across as cheesy, but it's not a game that takes itself seriously.

A gripe of the game was that it started as many newer FPS games

have, with the main protagonist in a helicopter, which crashes, and he must find his companions. To me, it could've been more creative in that respect but it does make up for it as you progress.

You will shoot, and shoot some more, over twelve levels within this

game with each level having more enemies than the last. This was a redeeming feature of the game; like the past Serious Sam games, the engine is the most impressive part as it can handle a fair amount of npcs (non playable characters) on screen at once without any lag or framerate issues, which is also

present in this title. This brings on the feeling of being heavily outnumbered and how the hell are you going to not die, while trying to kill each and every enemy... especially when some of them are running at you with bombs.

It had me chuckle a few times





with the dialogue, even though it is not the best written story – because a game that is using a retro mechanics system does not need a gripping narrative to engross the player. But, using gameplay as its key feature, it was a nice change in pace to see this come back (should make more FPS like this).

As you progress through the twelve missions, you will unlock

more weapons to wreak havoc on the oncoming slaughter of alien invaders; these range from a sledgehammer to a BFG gun, and, for each enemy, Sam Stone has a unique melee one-hit kill with gory animations. But it also (in my opinion) makes the player use the array of weapons as each one is most effective on different enemies, so you will be running back and shooting/swapping the weapons frequently. This gives it a

much better pace than many of today's throwback shooters.

The graphics for Serious Sam 3 are really nice seeing as this was a 2011 release, and it holds up quite well today.

But, my personal favorite part is the soundtrack – it's put into place within the game seamlessly. When a legion of enemies turn up, a heavy metal soundtrack fades in

and makes the battle more intense, making you edge that bit closer to your screen as it draws you in. Then, once the battle is won, the music fades out and you have the silence of victory and the knowledge that it is safe for now.

In conclusion Serious Sam 3 BFE is a fun nostalgic look back at what FPS games were like before the modern takeover. There are true moments of fun within the game – which should not be missed by fans of the genre – especially the old school Doom and Duke fans out there. If you are not familiar with this type of game, it could go either way for you, but it's definitely worth a try – especially if it's an offer or in a humble bundle.



**Oscar** graduated from CSUN, is a Music Director/Teacher, beta tester, Wikipedia editor, and Ubuntu Forums contributor. You can contact him via: [www.gplus.to/7bluehand](http://www.gplus.to/7bluehand) or email: [www.7bluehand@gmail.com](mailto:www.7bluehand@gmail.com)





I'll start by saying that I wouldn't really class Proteus as a game as such. To me, a game has tasks, levels, difficulty. Lives even. Proteus is more of a meditative demo than anything else. I'll let the developers, Twisted Tree, try and describe it:

*"Proteus is a game about exploration and immersion in a dream-like island world where the soundtrack to your play is created by your surroundings. Presented and controlled like a classic first-person shooter, the primary means of interaction is simply your presence in*

*the world. The procedurally generated islands are home to creatures natural and imagined, tranquil valleys and ruins with magical properties."*

A new world is created every time you start the game. There are no save points, or saving for that matter; you start afresh every time. You could be in an autumn forest, a summer field, a winter wonderland, or walking along some random pathways.

There's no aim or task to Proteus. You just wander around

looking at the island you're on and listening to the randomly generated music. Everything you see and do affects the music. Thankfully all the music is very soothing. You may meet a little creature and its movements will add something to the music as it runs/hops away from you.

It's definitely something of a trippy experience. The graphics are very simple and blocky, without detail - similar, in fact, to old Atari Frogger graphics. It's definitely something that you can fire up and get lost in. I don't meditate, but I'm

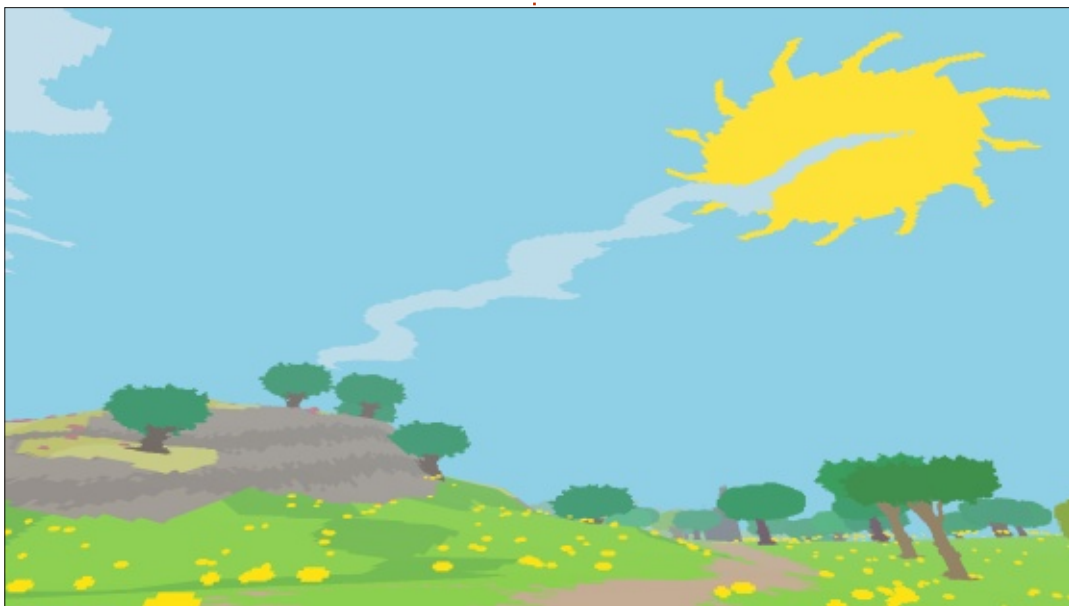
sure this would be good for those looking for some audio/video stimulation while relaxing. I'd love to try this with an Oculus Rift and headphones!

### PROS:

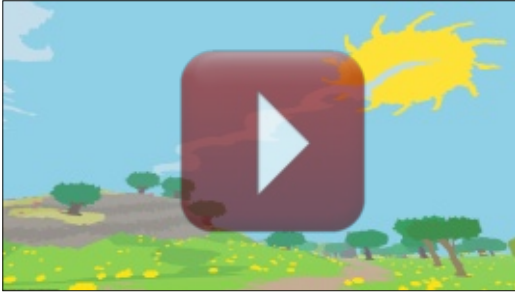
- Random game every time.
- Soothing music

### CONS:

- Long loading time on starting a new game.
- Can't seem to run, only walk.



## Trailer:



<http://www.youtube.com/watch?v=rpkpuoq6y9s#t=93>

## SYSTEM REQUIREMENTS

- 2.0GHz CPU 3GB RAM
- 512MB graphics card
- Windows: XP SP3 & above
- Mac: OSX 10.6 & above
- Ubuntu 12.04 LTS, Mint 13 LTS, Fedora 16

## COMPETITION

We have two copies of Proteus to give away this month. To win a copy, simply answer this question:

**Who developed Proteus?**

Email your answer to:

[ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org)

before Friday 21st March. Before

entering, please make sure you already have a Steam account to paste the key into, and on Friday 21st March, I'll pick two winners at random. **Good luck!**



**Ronnie** is the found, and editor, of Full Circle magazine. He is a part-time artist who's work can be seen at: [RonnieTucker.co.uk](http://RonnieTucker.co.uk)



# MY DESKTOP

Your chance to show the world your desktop or PC. Email your screenshots and photos to: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org) and include a brief paragraph about your desktop, your PC's specs and any other interesting tidbits about your setup.



I am using Ubuntu 13.10 (Dual Boot with Windows 8) with a 2nd generation Intel® Core™ i7-2670QM processor and 4GB RAM

Graphics: 2GB NVIDIA® GeForce® GT 540M.

The theme is Mac OSX.

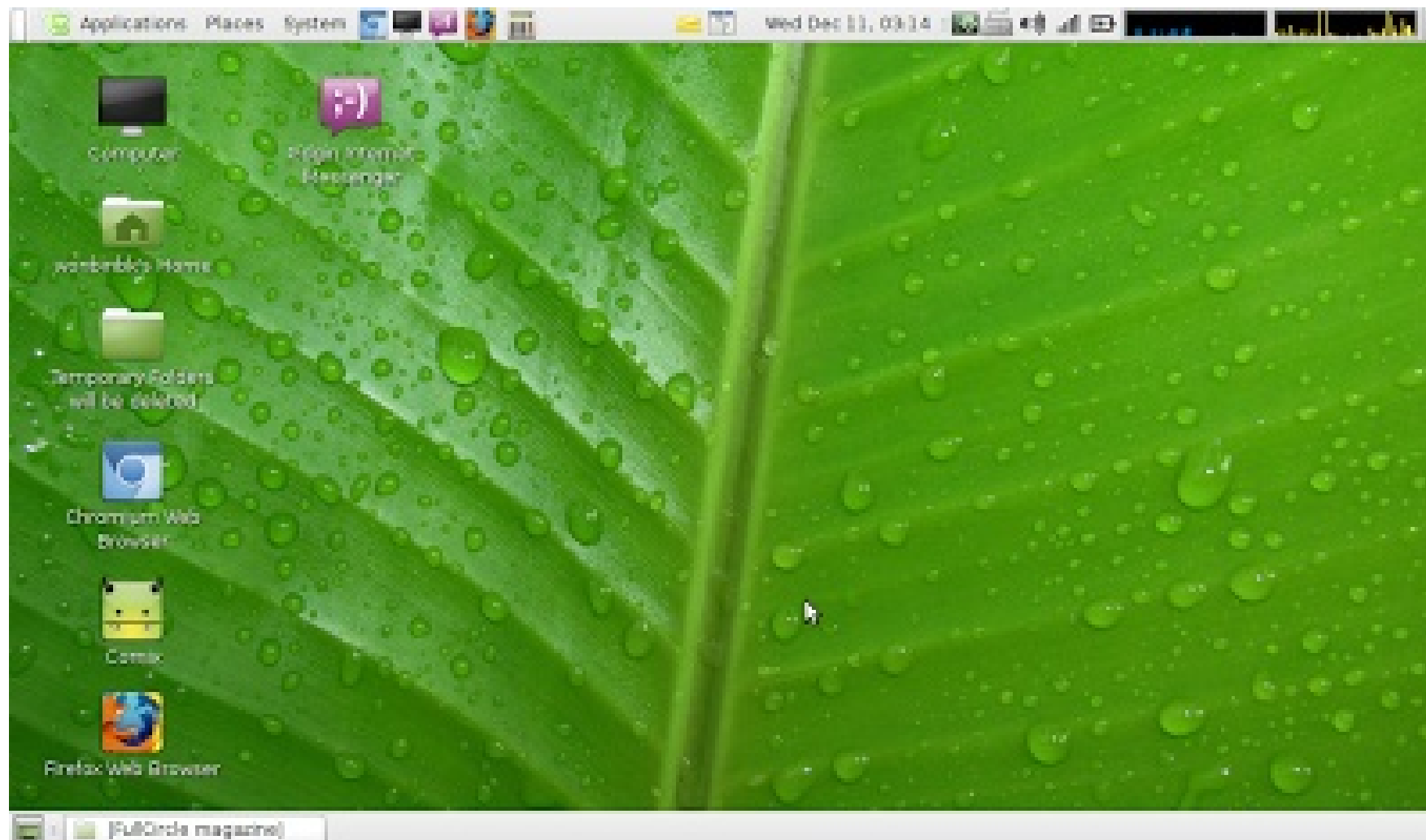
On the bottom is Cairo Dock with Macintosh Icons.

I have been using Ubuntu since 12.04 and I am very happy that I

made the switch.

**Muddassir Nazir**





is also a sticky note and a "force quit" icon for convenience. I use Guake Terminal to get to a pull-down terminal anywhere anytime by pressing F12. You can see I don't have much GUI "eye candy" stuff because my laptop is not powerful enough to be that beautiful.

Hope I can get some comments and/or recommendations to get this desktop to look a bit more gorgeous.

**wonbinbk**

I love Linux. I've been using Linux since 2010. Starting with Ubuntu (when Canonical still shipped free CDs around the world) and said goodbye to Ubuntu when Unity came in the picture. I guess I'm not that easy to change. Right now I'm using Linux Mint 15. Pretty happy with it.

My laptop is a Gateway LT27:  
Intel Atom N570  
Intel GMA 3150  
2GB DDR3 Memory  
320GB HDD  
Display: 10.1" LED LCD @ 1024x600

This laptop can play Full HD

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video amazingly smoothly using the latest mplayer with just ~50-70% CPU usage. On the top right corner I have Network Monitor.

You can see I've already removed the Mint menu and replaced it with a Standard Gnome menu in the top left corner. There

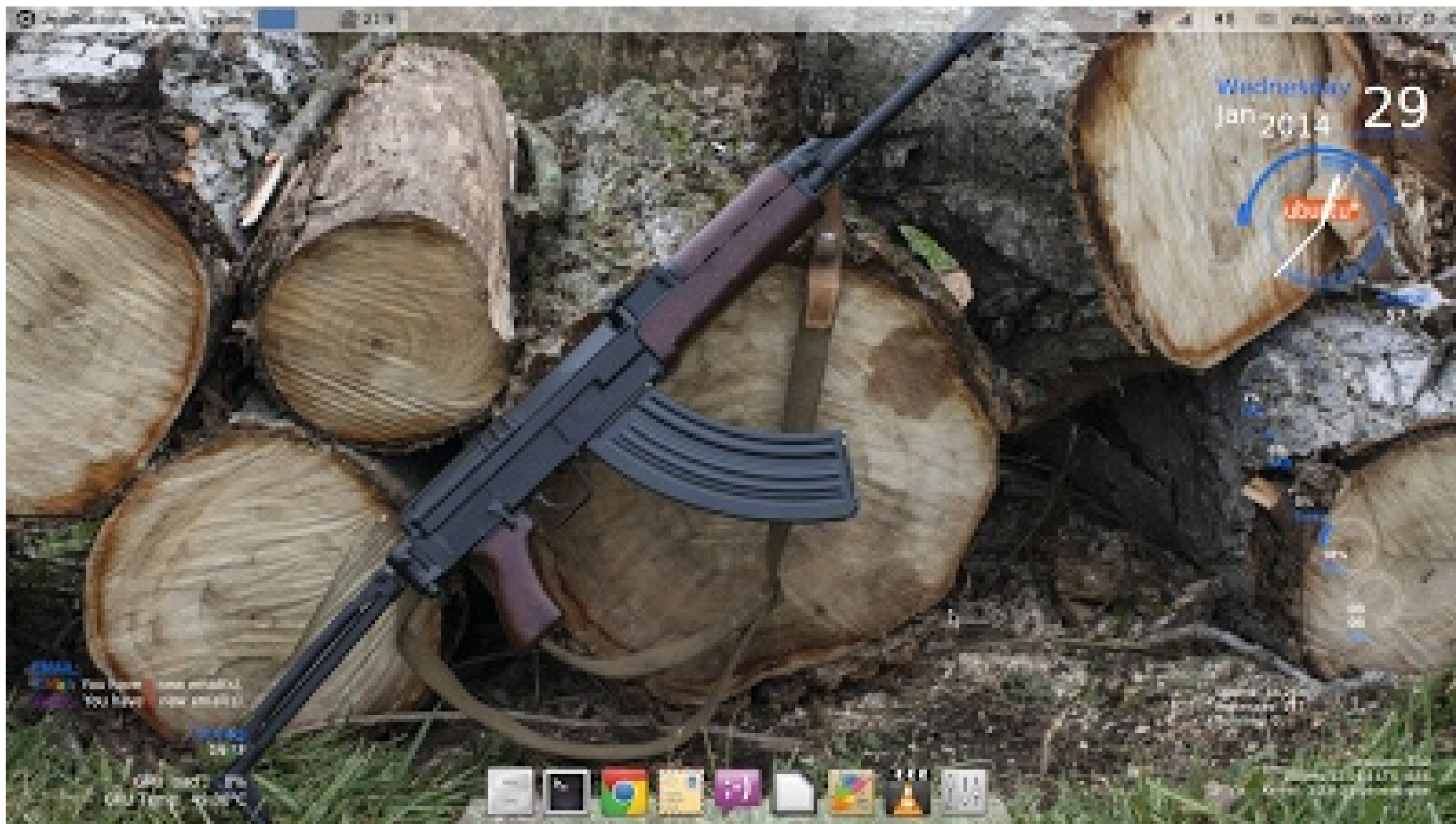


This is my desktop "New Year 2014" version. I like a clean desktop environment, easy to use applications and successfully finishing any task.

My system is a desktop AMD Phenom 9750 Quad-Core Processor, 4GB RAM memory, 640GB Hard Drive, LG Blu-Ray burner, ATI Radeon HD 2600 XT,

and 27 inch Monitor. Running Ubuntu 12.04 LTS and Windows 8.1 on Dual boot.

**James Smith**



This is my desktop. It's a command line build of Ubuntu 12.04 with MATE as the DE. What you see is the MATE Desktop Environment, WBar (launcher), and my highly customized conky setup.

It was a long road getting it set up just the way I like it, but I'm finally happy enough with it to stop tweaking.

Here's my specs:

Dell Inspiron 530  
Intel Core 2 Quad @ 2.4 GHz  
8 GB RAM  
ATI Radeon HD 5450 Graphics

**Jonathan A. Wingo**





# HOW TO CONTRIBUTE

## FULL CIRCLE NEEDS YOU!

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We are always looking for new articles to include in Full Circle. For help and advice please see the **Official Full Circle Style Guide**: <http://url.fullcirclemagazine.org/75d471>

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**Desktop** screens should be emailed to: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)  
... or you can visit our **forum** via: [fullcirclemagazine.org](http://fullcirclemagazine.org)

### FCM#83

#### Deadline:

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#### Release:

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